

MINING WORLD

Mining Show Edition

AMC Meets in San Francisco
September 20-24



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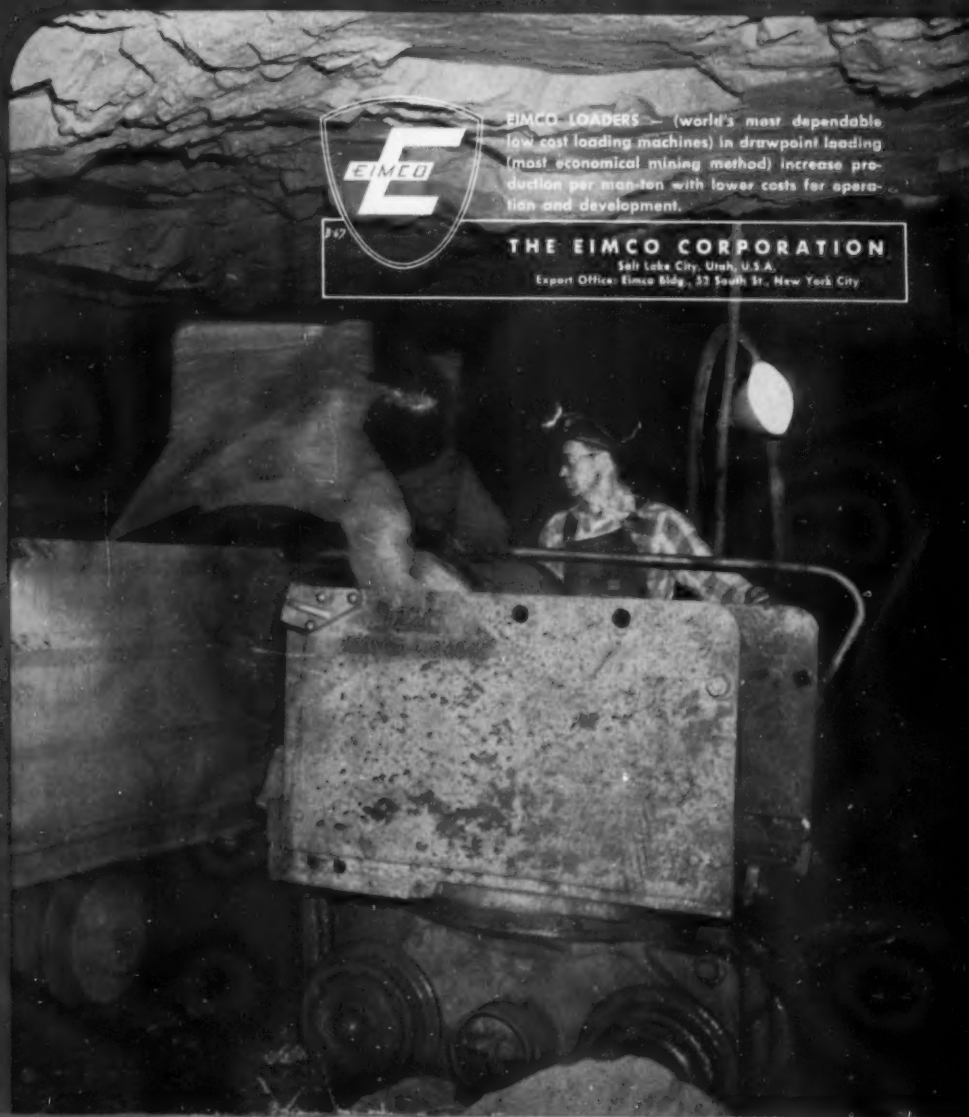
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SEPTEMBER 1954

Vol. 16 No. 10

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PAYS OFF MANY WAYS *around a mine!*

Here's one of the many jobs^{*} where a CAT^{*} HT4 Shovel pays off around a mine. Equipped with an anglegrader, this unit is building a haul road for the U. S. Pumice Co., Leeving, Calif. Altitude—about 8000 feet. Engineered to stand up under difficult conditions, this rig takes the altitude and tough terrain in stride.

Around *any* mine, the Caterpillar HT4 Shovel itself is a mighty handy worker. You can keep it busy all day, day after day, on many different jobs—stripping, excavating, loading, grading, cleaning up, removing snow, back-filling, to name a few. What's more, on *any* job, you can count on it for *profitable* production. Its weight, horsepower and bucket capacity are *balanced* for maximum performance.

How rugged is the HT4? This will give you some idea. Its construction, in *every* detail, is *extra-strong*. For example, frame and mounting and lift arms are welded and cross-braced to prevent weaving and side sway. The bucket has a heat-treated, high-carbon steel cutting edge for longer wear and easy replacement. And the hydraulic system is enclosed, protected against

dirt and grit. All these and other *important* details enable it to stay in there working with a minimum of down time!

Check over the number of different ways you can use the HT4 on your operation. Your Caterpillar Dealer, nearby for information and service, will be glad to show you what it can do for you on all these jobs. Just name the date—he'll demonstrate!

Caterpillar Tractor Co., San Leandro, Calif.; Peoria, Ill., U.S.A.



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These M. S. A. products can help answer
YOUR PRODUCTION-SAFETY NEEDS— *see them at Booth 440*
AMERICAN MINING CONGRESS
San Francisco—September 20-24



M.S.A. SELF-RESCUER

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GRAB SAMPLES From the Mail

Tributing Long Featured

Dear Sir:

I was greatly interested in the article on block leasing at Spokane-Idaho in your March issue, on account of its similarity to the tribute system which was formerly prevalent in the non-ferrous metal mines of England. In a book published in 1855 (*Cornwall: Its Mines and Miners*, London, 1855) the system is described as follows:

"When the lode has been divided (developed) as we have said it is open to the inspection of all the labouring miners in the country; and, by an admirable system, each mass, or 'pitch,' is let by public competition for two months, to two, or four, or more miners, who may work it as they choose. These men agree to break the ores, wheel them, raise them to the surface (as they say, 'to grass'), and to pay for the whole process of dressing the ores (if desired), and therefore of the expense of bringing them into a fit condition for the market. The ores so raised are sold every week, and the miner immediately receives his tribute or percentage for which he agreed to work. This varies from sixpence to thirteen shillings in the pound, according to the richness or poverty of the ore produced."

The writer goes on to say: "This subterranean lottery abounds in blanks and prizes. Sometimes the lode gets suddenly rich in the pitch, sometimes poor; sometimes it becomes 'wring up,' or impoverished; sometimes it heaves, at others altogether vanishes. Tributing, therefore, is a business requiring keen judgement and close application."

Tributing has long been a feature of the Southern Rhodesian gold-mining industry, but in this case the tributor takes the entire mine, the owner of which provides no services. Tribute agreements are subject to Government approval, the standard rate of payment to the owner being five percent of the value of the output, paid monthly. Higher rates are sometimes approved when it can be shown that the tributor will not be prejudiced by them. The normal length of the lease is three years, with the right of renewal for another three.

I find *WORLD MINING*, with its variety of articles and wide coverage, a most interesting publication, and I am grateful to be able to read it.

J. C. Ferguson
Geological Survey Office
Salisbury, Southern Rhodesia

Copies In Demand

Dear Sir:

Our head office receives several copies of *WORLD MINING* each month, but unfortunately I do not often receive one, as there is a demand for them from other mines in the Group.

Would it be possible for me to obtain a copy every month for the Selukwe Peak mine, sent directly to me? I would be very grateful if this could be managed.

J. K. MacDonald
Mine Manager
Selukwe Peak Mine
Selukwe, Southern Rhodesia

MINING WORLD

Including the Export Edition *WORLD MINING*

Published monthly except in April when publication is semi-monthly

VOLUME 16

SEPTEMBER 1954

NUMBER 10

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SEPTEMBER 1954

[World Mining Section—3]

3

Announcing...

revolutionary new diesel fuel system...

as simple as gasoline carburetion and ignition

Exclusive PT Fuel System now standard on all Cummins Diesels

- Drastically reduces maintenance costs
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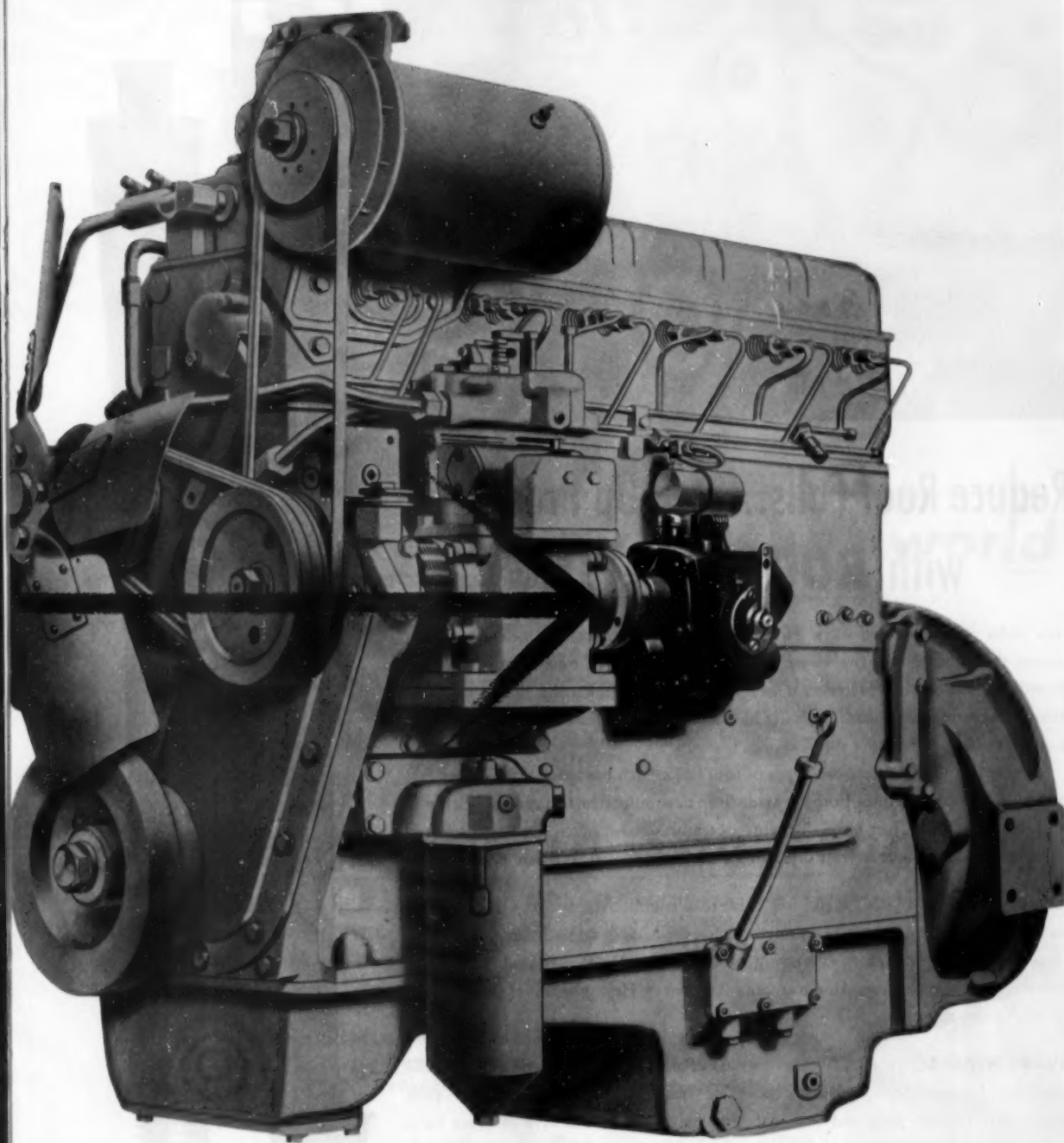
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Engine Company, Inc., Columbus, Indiana

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(S-18-54)



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Roof bolts pay off in two ways. First, they reduce the chance of roof falls. That's because the bolts consolidate varying layers of strata into a single-unit, thick beam. Second, the use of bolts increases mining efficiency by eliminating timber supports. Faster maneuvering and loading, faster haulage, improved ventilation, lower costs—all are advantages of proper roof bolting.

Bethlehem Pacific offers two types of roof bolts. Each has advantages, depending upon local strata conditions. Both are made from new-billet steel in a variety of lengths.

Like full details? Just phone or write our nearest sales office. Or write direct to Bethlehem Pacific Coast Steel Corporation, 20th & Illinois Sts., San Francisco 19.

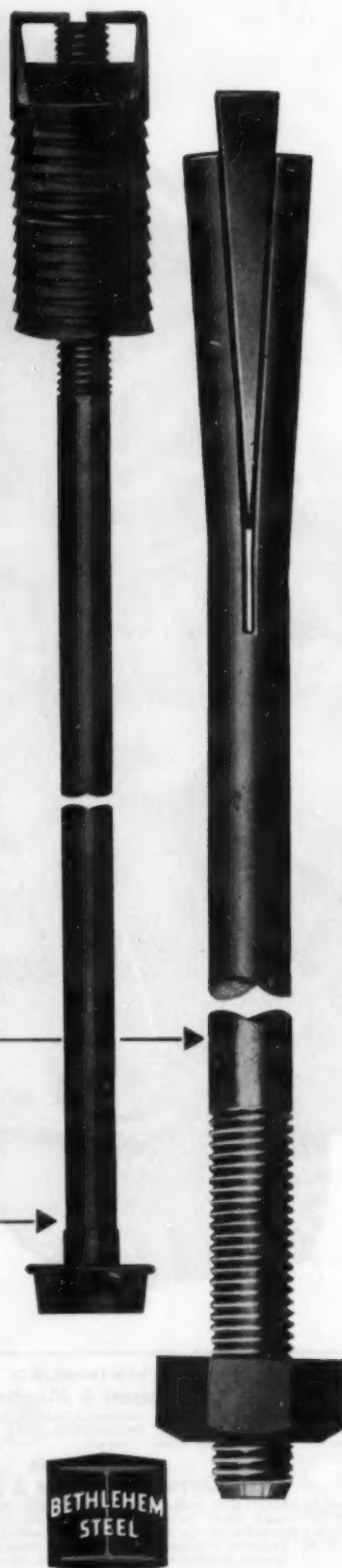
SLOTTED ROOF BOLT—One end has a slot to accommodate wedge. Other end has 5 in. of 1-in. rolled threads. When driven against the back of a 1¼-in. hole, the wedge is forced deep into the slot, expanding bolt ends so that tremendous pressure is exerted against sides of hole. American Standard Heavy Hexagon nut is tightened to hold roof plate against roof.

SQUARE HEAD ROOF BOLT—The expansion shell fits on the end of a special unchamfered square-head, rolled-thread ¾-in. bolt. The Type F malleable shell consists of a tapered plug and two matching halves which are held in place by a small wire clip. When the bolt is driven in place and tightened, the plug expands the halves and forces them against the sides of the hole. This improved design has many advantages.

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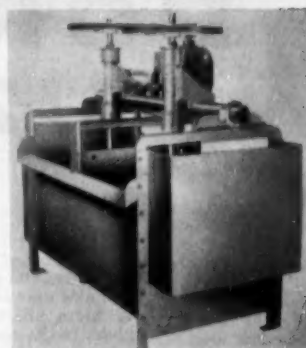
At mills all over the world

This picture of mineral laden froth is typical of Agitair operations all over the world. And because results are always as good or better than standards set by laboratory and pilot plant procedure, Agitair has come to be recognized as the leader in its field. Agitair is the versatile machine that adapts to the specific job, serves dependably and economically and stands up under long, hard use. Agitair has many applications in the metal and non-metallic industries. Write us about your specific problem . . . no obligation.

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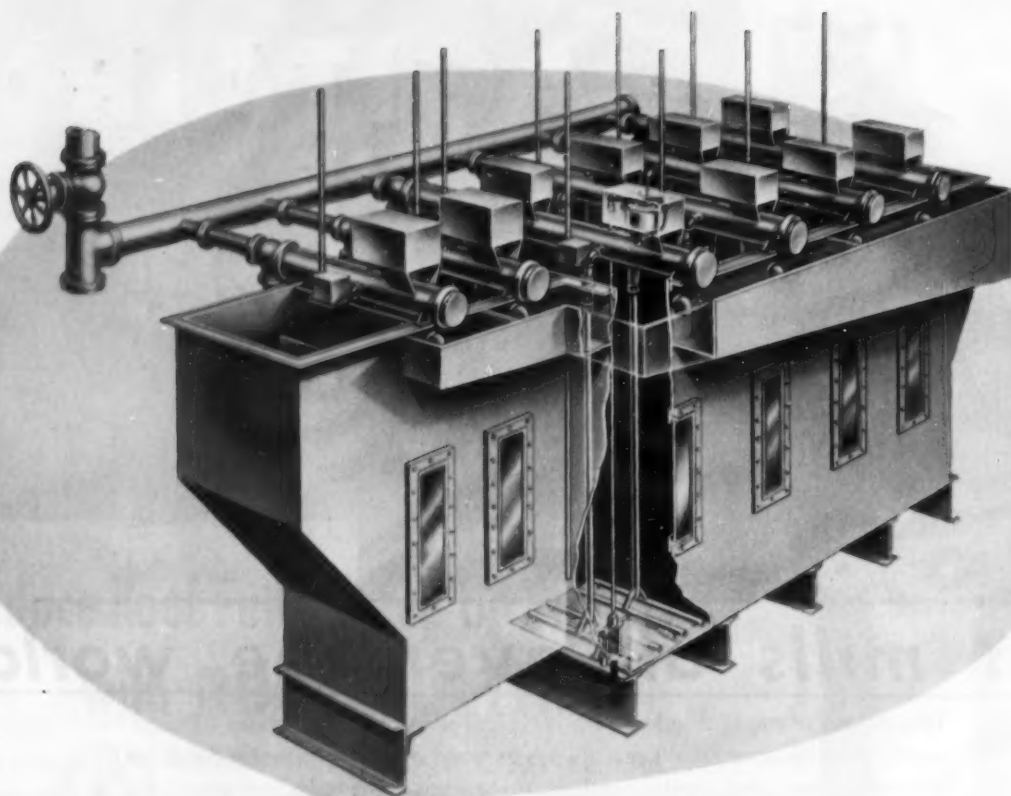


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SEPTEMBER 1954

[World Mining Section—7]



Something **NEW** has been added

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Completely re-designed
unit makes more effective
use of hydraulic water
to produce clean deslimed
fractions sized within
narrow limits.

For those applications where hydraulic classification is indicated for the sizing or grading of minus 8 mesh pulps the new Dorrco Jet Sizer is the answer.

What's new about the Jet Sizer? First, a new — and more efficient — water distribution system which both reduces initial cost and simplifies maintenance. Second, extreme flexibility of cell arrangement — through which $1\frac{1}{4}$ to $21\frac{1}{2}$ pockets can be arranged in series or in banks in virtually any combination.

Continuous product discharge is controlled by a fully automatic system requiring a minimum of operating attention. Low operating costs result from negligible power requirements and inexpensive low head hydraulic water.

If you'd like more information on the Jet Sizer write for a copy of Bulletin 2342 available at no obligation from The Dorr Company, Stamford, Connecticut.

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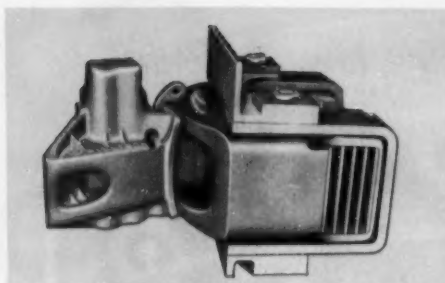


NATIONAL equipment cuts per-ton costs

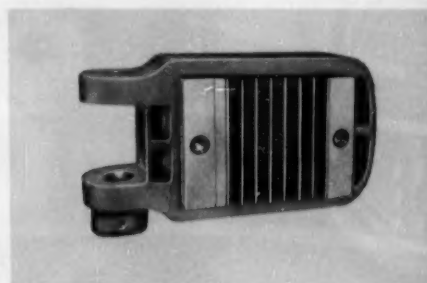
NC-1 MINE CAR TRUCK is the latest example of National's pioneering in better equipment. Among NC-1 truck advantages are longer and softer ride springs, friction damping mechanism that controls vertical and transverse oscillations, automatic frame alignment and cast one-piece bolster with large lubricated center bearing. A-9021



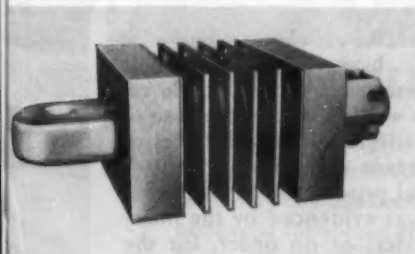
WILLISON AUTOMATIC COUPLERS save time with maximum safety, couple at either end of car or locomotive, require no manual assistance, eliminate damaging slack, permit high speeds with maximum stability.



NATIONAL MI-235 Rubber-Cushioned Draft Gear primarily used in Willison spherical-horn coupler assemblies for drop-bottom cars and locomotives; are effective with link and pin bumpers and in strap yokes.



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NATIONAL MI-230 Rubber-Cushioned Draft Gear for cars in rotary dump service. High-capacity rubber pads with soft initial action provide maximum impact protection, lengthen equipment life. Available in capacities and designs to fit individual requirements.



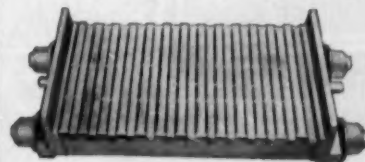
NACO STEEL WHEELS, made from quality-controlled Naco cast steel—of high yield point, great tensile strength and ductility—reduce tread spalling or flange breaking. Available in all sizes regularly used in mining or industrial operations.



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CAST STEEL PALLET AND MALLIX SINTERING BARS

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San Francisco, September 20th-23rd

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NATIONAL MALLEABLE AND STEEL CASTINGS



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MINE
HOISTS



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MILLS



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VIBRATING GRIZZLIES
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ENGINES

View shows two of several 7' Symons Super Heavy Duty Short Head Cone Crushers installed in the Lake Superior region.



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"Scramming" on the Mesabi



INTERNATIONAL TD-14A puts speed and power into one of the first operations of its kind in the east end of Mesabi Range. Lenci & Politano took the "scramming" contract for the removal of small pockets and deposits of ore remaining after the big equipment had been taken away. They report the little crawler was just right for the close quarters and heavy going.

INTERNATIONAL Crawler makes a big impression on east end of the Range

What's "scramming?" It's cleaning up the small pockets and deposits of ore that remain after main ore body has been worked. It is a job that brings out the special abilities of smaller crawlers in the complete INTERNATIONAL line according to Lenci & Politano, "scramming" contractors in the east end of Mesabi Range.

An INTERNATIONAL TD-14A was used in the operation. Operator Leonard Lehman, who had always handled big crawlers before, has this to say:

"The way that tractor can get around in

tight corners and the size of the load it can handle were things I had not expected. It showed me there is a place for the smaller INTERNATIONAL crawler even in such a big operation as mining the Mesabi Range!"

Do you need big power—little power—or somewhere in between? See the man who can fix you up just right, and keep it rolling for you. That's your INTERNATIONAL Industrial Distributor. Get in touch with him soon for a demonstration of "power that pays!"

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILL.

For everything in Earthmoving

ON TRACKS ... ON RUBBER

See INTERNATIONAL'S
Complete Earthmoving Line



POWER THAT PAYS

INTERNATIONAL

how

MARCY MILL

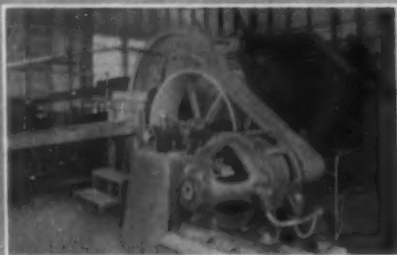
leadership in mechanical performance can help you cut costs

Grinding mills are selected on the basis of low-cost-per-ton output resulting from efficient, dependable mechanical and metallurgical performance. That's why so many successful mining companies throughout the world continue to order and reorder Marcy* Grate Discharge Ball Mills and Marcy Open End Rod Mills.

for example...



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V-belt drive.



Speed reducer drive.

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direct connected with flexible coupling using cut tooth single helical or herringbone steel gears.

flat belt, V-belt or speed reducer drive with meehanite cut tooth spur gears.

variable speed drives for special applications.

- single helical and herringbone gears are made to American Gear Manufacturers Association recommendations as to tooth shape, size, material specifications, etc., assuring long life and efficiency. This, combined with precision gear cutting, provides an extra high service factor.

*BOTH MARCY AND MASSCO ARE REGISTERED TRADEMARKS.

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Denver 17, Colorado

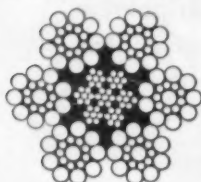
OFFICES IN SALT LAKE CITY, EL PASO, 1775 BROADWAY, N. Y. C.



Here's your best slusher rope buy!

The rugged conditions of slusher service call for specialized ropes, engineered to suit the job. Few applications for wire rope involve the severe crushing, jerking, heavy loading, and abrasion to which these ropes are subjected. This is a job for Tiger Brand Monitor Steel special slusher ropes.

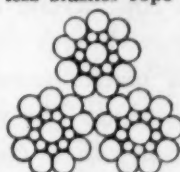
TIGER BRAND 6 x 19 Seale Excellay with a wire core is the "work-horse" slusher rope. It offers the best combination of strength, crushing resistance, abrasion resistance, and flexibility for average slusher operations.



All slusher ropes should be specified Excellay—produced by the preforming process which increases flexibility, resists kinking, and keeps protruding broken wires to a minimum. Because broken strand ends don't unlay like ordinary rope, Excellay preformed ropes

can often be salvaged after damage which would ruin others.

TIGER BRAND 3 x 19 Seale Excellay coreless slusher rope is preferred by many operators for use in exceptionally tough conditions where rope drags constantly on broken chunks or frequently gets buried in coarse muck. Its large strands and high crushing strength provide extra ruggedness.



The many extra qualities

of Tiger Brand Monitor Steel mean lower mining costs. That's why it's your best slusher rope buy. It comes in a type and size to meet every mining application and requirement.



Monitor Steel has no equal for mining-rope applications and is available only in U.S.S. American Tiger Brand Wire Rope. For advice on the best type of Tiger Brand Monitor Steel Wire Rope for your mining-rope jobs, you're welcome to the services of a Tiger Brand Field Specialist. Contact your local distributor or write to the Columbia-Geneva Steel Division, United States Steel Corporation, 1403 Russ Building, San Francisco 6, (Dept. MW-8).



U.S.S. TIGER BRAND Wire Rope

Columbia-Geneva Steel Division, United States Steel Corporation, San Francisco
In the East: American Steel & Wire Division, Cleveland, Ohio

UNITED STATES STEEL

"Today, the most fruitful prospecting is done in the laboratory—not in the field."

Develop a process to suit the ore,"
say Messrs. P. B. Dettmer, General Superintendent,
and L. J. Lichty, Managing Director,
of Cobalt Chemicals Limited, Cobalt, Ont.

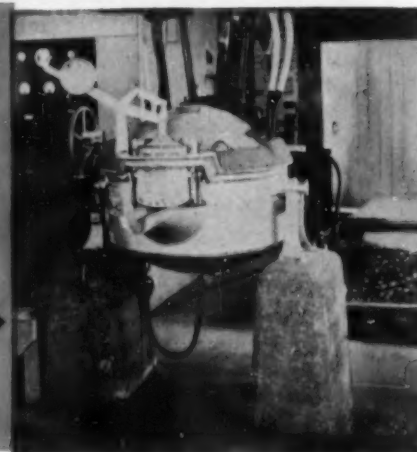
Quebec Metallurgical Industries, Ltd. followed exactly this policy in directing development work for Cobalt Chemicals Limited. Research and pilot plant operations were carried on at their Ottawa Laboratories. They resulted in establishment of the process now employed on a commercial basis for the treatment of arsenical silver-cobalt-nickel concentrates produced in the Cobalt area.

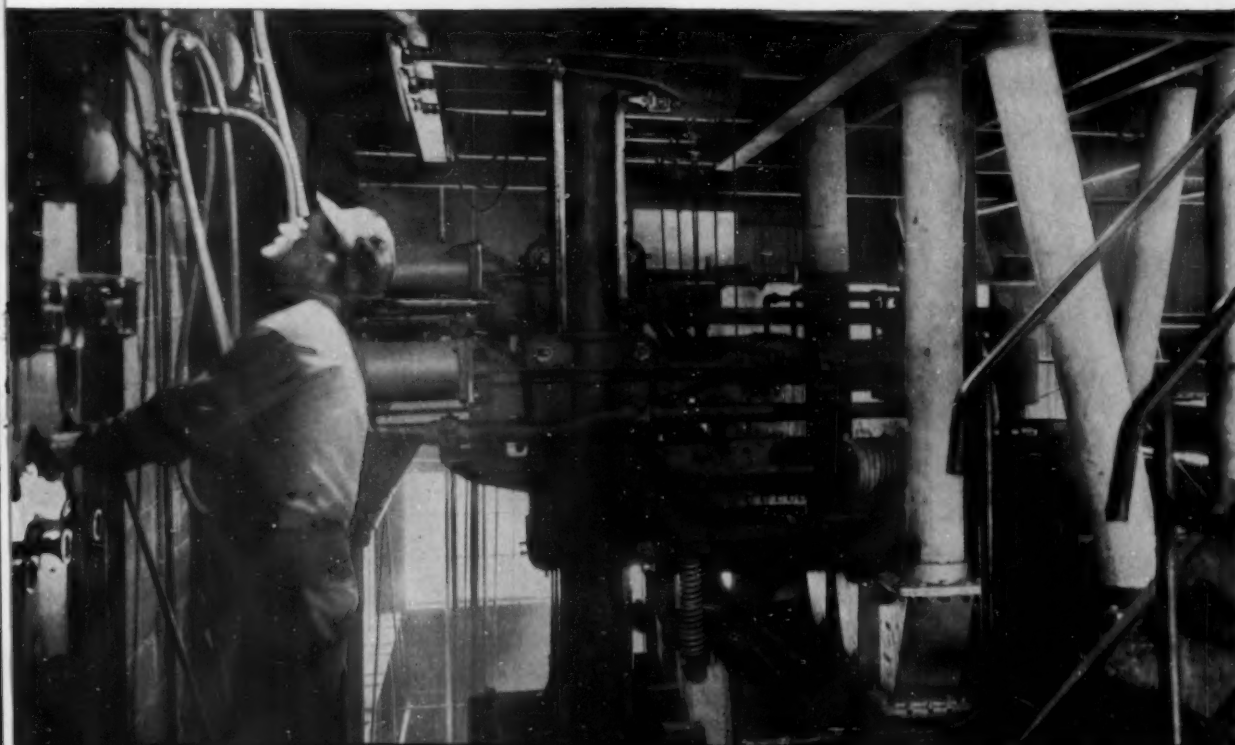
The 600 KVA. Smelter, shown on the opposite page, is now operating on a commercial basis at Cobalt Chemicals Limited. Concentrates, mixed with fluxes, are put through this furnace and smelted to matte; arsenious oxide is also produced as a valuable side product. The matte is ground, roasted, sulphated and leached, after which copper, nickel, cobalt and silver are selectively precipitated and reduced to metallic form.



◀ The "work horse" during the initial experiments, when their chemists were formulating the process, was this 50 KW. Lectromelt® Furnace. Although unimpressive in appearance, it has the flexibility which enables researchers to proceed quickly and surely. It permits them to make a quick shift as a new approach is suggested.

The pilot plant which made possible the next step—taking the now proven process out of the experimental stage toward production—was this 100 KW. Lectromelt Furnace. Its larger size and higher power let their metallurgists approximate conditions expected under actual smelting conditions. Thus fewer faults remained to be corrected when operations moved from the Laboratories at Ottawa into the plant at Cobalt. ▶





Lectromelt electrode holders and controls for the 600 KVA. smelting furnace at Cabott Chemicals Limited. Concentrates are charged through the ducts seen at the right.



Left: Exact control of the furnace produces a molten slag and matte at tapping time. At this stage, the matte contains cobalt, silver, nickel, copper and sulfur.

Whether your smelting process is still experimental or ready to put into production, there's Lectromelt equipment able to serve you. Our engineers have been conducting continuing research for many years on electrothermic reductions. This experience is available to you. For Catalog No. 105, write Pittsburgh Lectromelt Furnace Corporation, 324 32nd St., Pittsburgh 30, Pa.

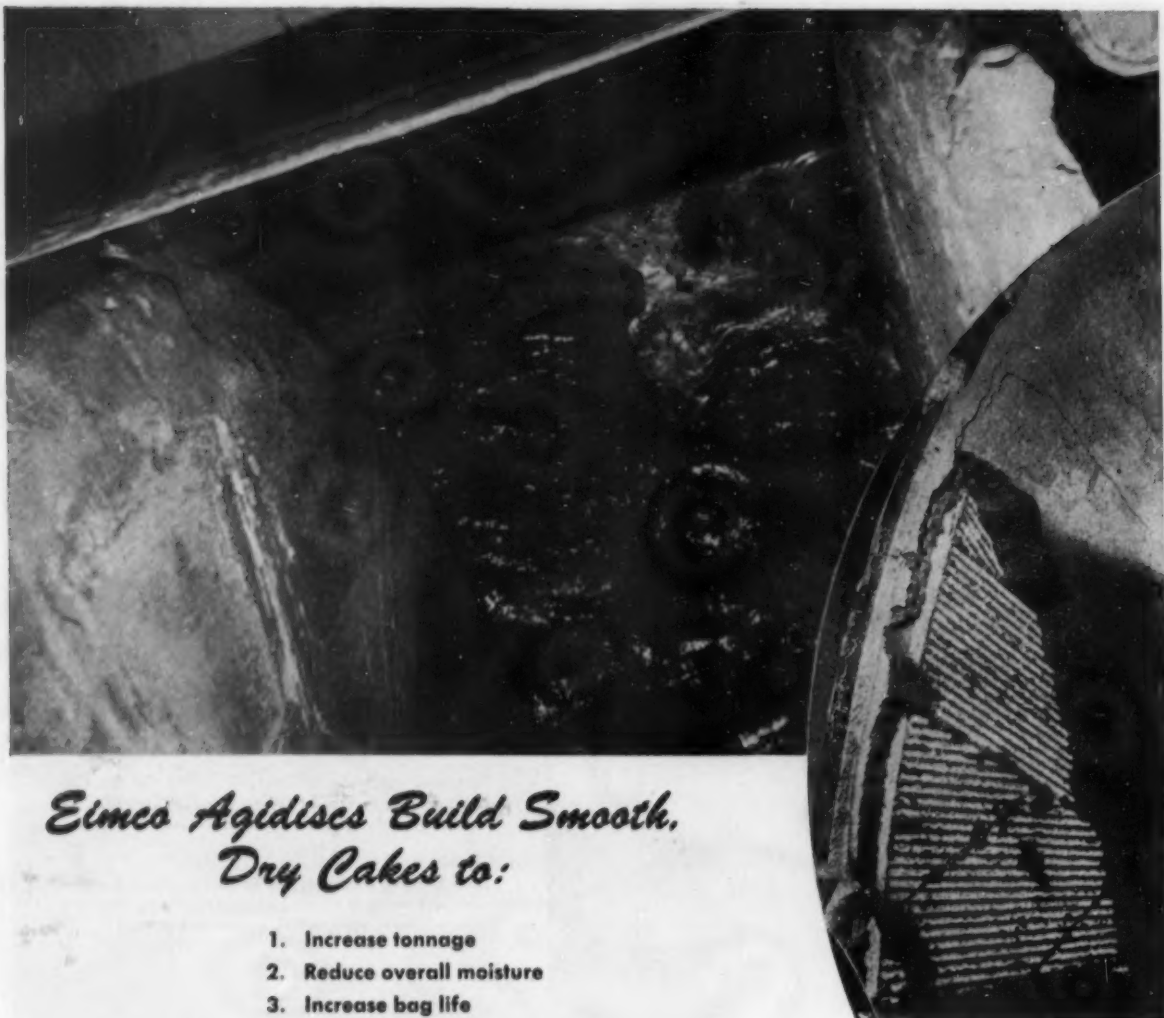
REG. T. M. U. S. PAT. OFF.

WHEN YOU MELT... **MOORE RAPID**
Lectromelt

SEPTEMBER 1954

[World Mining Section—15]





Eimco Agidiscs Build Smooth, Dry Cakes to:

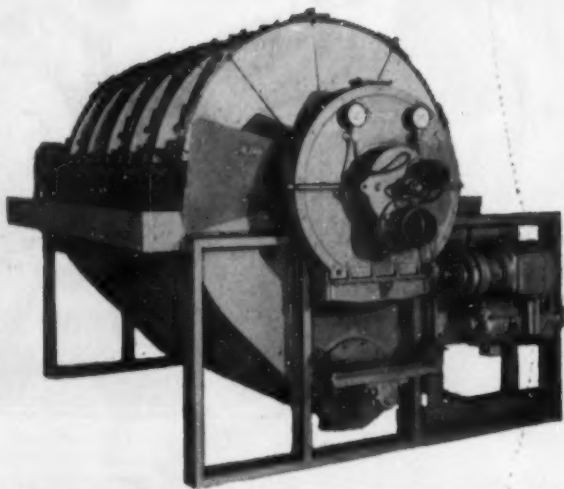
1. Increase tonnage
2. Reduce overall moisture
3. Increase bag life
4. Speed dewatering
5. Increase profits

Fast settling solids in metallurgical slurries are easily kept suspended in solution by the gentle agitating motion of the Eimco Agidisc filter.

This action, in the filter, evenly distributes all particles, regardless of size, so that the entire surface of the disc is covered with a cake of even thickness. Cake thus formed may be dewatered and dried uniformly so that there are no real wet spots or dry spots.

Metallurgical plants using Eimco Agidisc filters are enjoying greater capacity per square foot of filter area per hour (20% better) and lower moisture content in the cake.

Let an Eimco Engineer tell you how the Agidisc works. Whether or not it will make more money for you.



DT7

THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Texas Birmingham, Ala. Duluth, Minn. Kellogg, Ida. London, Eng. Paris, France Milan, Italy

an EXTRA MARGIN of Strength-



without Excess Weight

The unique two-section boom used on Bucyrus-Erie 4½- to 8-cu. yd. Ward Leonard electric shovels solves one of the problems of front-end construction on heavy-duty excavators in a sound, practical way. It provides the strength needed to withstand the shock loads of digging, yet is remarkably light in weight to help keep swing inertia low.

The two-section boom is only one example of that extra margin built into Bucyrus-Erie heavy-duty excavators—an extra margin in design that pays off in extra loads and more output. There's much more to the story—the tubular dipper handle, the independent rope crowd, the twin dual hoist ropes, the deck location of crowd machinery, the improved dipper design. Write for complete information on the model of your choice—the 4½-yd. 110-B, the 6-yd. 150-B, and the 8-yd. 190-B.



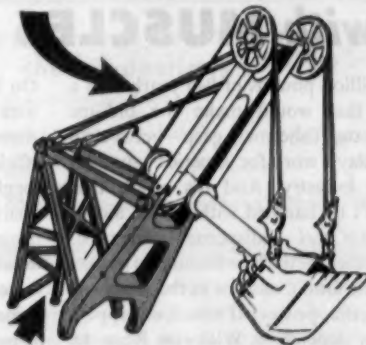
SOUTH MILWAUKEE, WISCONSIN

AT THE MINING SHOW • SAN FRANCISCO, SEPT. 20-23

visit Booth 911 and see a 150-B electric shovel model in operation.

[World Mining Section—17]

Upper boom section, bridge-strand connected to the A-frame, is relatively lighter in construction, because it has to carry only the loads resulting from the pull of the hoist ropes and from the acceleration and deceleration of the swing.



Sturdy lower section, securely attached to the A-frame by pin-connected struts to form an integral part of the machine, has ample strength to take the stresses and shock loads of the digging cycle. Widespread boom feet provide a brace effect to take swing loads . . . no cable suspension or sway braces are required.



today—it's a bigger catch with **MUSCLES OF STEEL**

Five billion pounds of fish yearly. It's a catch that would make the oldtime Gloucester fisherman gasp—yet it's all in the day's work for America's modern fishing industry. And it's a job that couldn't be handled without the aid of *muscles of steel*—indispensable wire rope.

Whether off the Newfoundland Banks, along the Gulf Coast, or in the waters of the Pacific, powerful winch-equipped trawlers depend on Wickwire Rope to haul in their heavily laden nets.

On landlubber assignments, too, Wickwire Rope has a vital role in helping American industry do a better and more efficient job. In the oil fields and the logging camps. In the mines and the quarries. On construction and highway projects. In numerous and varied materials handling operations. On all of these jobs, Wickwire Rope consistently demonstrates its ability to deliver performance that is unrivalled for long-lasting economy and reliability.

every industry benefits from wire rope

WICKWIRE ROPE



PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION



2534

THE COLORADO FUEL AND IRON CORPORATION—Denver (Head Office) • Seattle • Portland • Kansas City • Phoenix • Salt Lake City • Tulsa
PACIFIC COAST DIVISION—Los Angeles • Oakland • Portland • San Francisco • Seattle • Spokane

Why this conveyor is easy on belts

PERFECT ALIGNMENT is the answer . . . and far less belt replacement is the result.

First, PIONEER Continuflo Conveyors are jig-built at the factory, with joint frames between the sections to keep them straight and true.

Second, Head and tail pulleys are of large diameter to prevent belt slippage.

Third, Flexible rubber impact idlers absorb shock of falling materials, thus reducing cutting and wear of belt.

Fourth, Specially-designed self-aligning troughing idlers, in addition to forward tilt of regular idlers, hold belt in line.

Fifth, New-type self-cleaning rubber return idlers virtually eliminate build-up of abrasive materials on roller.

Sixth, Rollers and idlers turn easily. Anti-friction bearings are used throughout. This also cuts power requirement.

Needs fewer support towers

Another outstanding feature of PIONEER Conveyors is their extra strength and rigidity. Angle iron construction, welded vertical and diagonal braces, and upper and lower chords tied together with lattice-frame construction make it possible to space support points as far apart as 40 feet.

It's easy to assemble PIONEER conveyors because no section is over 10' in length. Head and tail sections are specially built to meet your H.P. requirements.

TONS PER HOUR DELIVERED BY PIONEER CONVEYORS*

Belt Width	Belt speed in feet per minute			Maximum lump size	
	300'	400'	500'	Sized	Unsize
18"	156	—	—	4"	6"
24"	276	368	—	6"	8"
30"	432	576	720	7"	12"
36"	624	832	1040	8"	16"

*Based on material weighing 2700 lbs. per cubic yard.



PIONEER Mesabi-type impact idler



PIONEER Rubber roll self-cleaning return idler.

PIONEER Self-aligning troughing idler



Ask your conveyor salesman these questions

1. What type of bearings are used?
2. Are they located on through shafts?
3. How many support towers will be necessary?
4. What's the approximate cost of assembling and erecting?

For helpful 52 page book telling how to select the right conveyor for YOUR job, write Pioneer Engineering Works, Inc., Minneapolis 13, Minn. (subsidiary of Poor & Company, Chicago) or nearest PIONEER Distributor.

DON'T MISS THIS CONVENTION HIGHLIGHT

See a real, live PIONEER crushing and screening plant in actual operation. Built to exact one-quarter scale, it feeds, crushes, screens and separates while you watch!

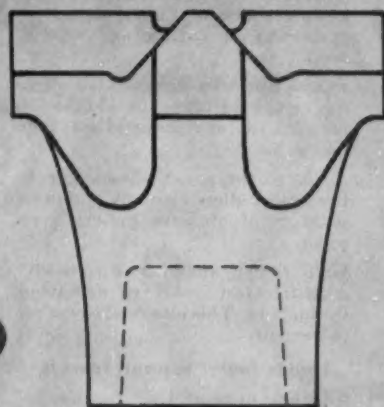
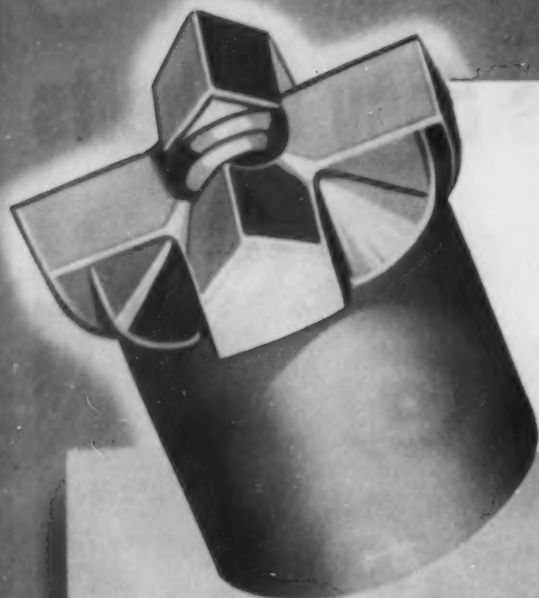
You'll find it in Booth 337, located under the marquee at the entrance of the auditorium. Don't miss this unusual exhibit.

BUY BOTH!
HIGHER OUTPUT
LOWER UPKEEP

Pioneer

Continuflo EQUIPMENT

Here's another

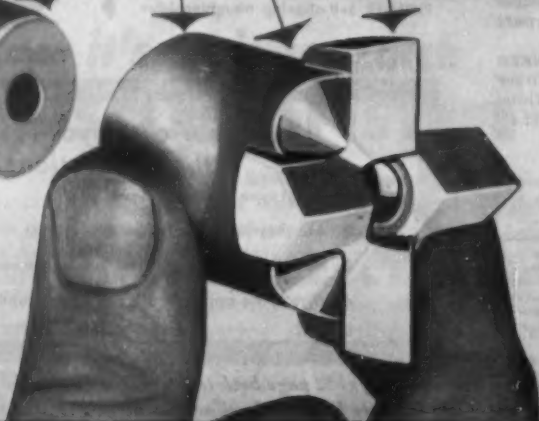
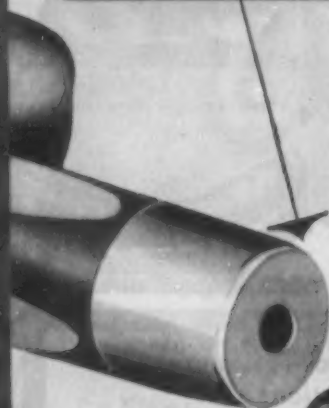


STRENGTH OF UNION

STRENGTH OF UNION

STRENGTH OF UNION

STRENGTH OF UNION



The union of the bit and the rod after drilling has a cohesive strength of several tons . . . A sharp blow of sufficient weight on the end of the bit skirt will serve to detach the bit from the rod.

S P E C I F I C A T I O N S

Mines everywhere cut drilling costs with CRD DETACHABLE DRILL BITS • 4 - Wing Type - Center Hole - Side Hole

<p>Class "A" Bits</p> <p>For class "A" drill steel connection on any steel. Best suited to 3/8" steel.</p>	1-1/4	Aluminum	<p>Class "B" Bits</p> <p>For class "B" drill steel connection on any steel. Best suited to 1", 1 1/8" and 1 1/4" steel.</p>	1-7/16	Orange
	1-5/16	Pink		1-1/2	Green
	1-3/8	Deep Green		1-9/16	Yellow
	1-7/8	Brown		1-5/8	White
	1-1/2	Grey		1-11/16	Black
	1-9/16	Maroon		1-3/4	Red
	1-5/8	Deep Blue		1-13/16	Blue
				1-7/8	Tan
				1-15/16	Plain
				2	Pink
				2-1/8	Maroon
				2-1/4	Aluminum

Cans are labeled showing size of steel socket, gauge of bit, and color.

way to cut drilling costs!

Use Le Roi-CLEVELAND one-use CRD Detachable Bits



Lower cost per foot of hole — that's the goal of everyone who has rock to drill. And that was the goal of Le Roi-CLEVELAND engineers, too. They didn't fool around with the problem either.

Fifty years of experience in designing rock drills was put to work. The result — a one-use detachable bit that can save you money in a wide variety of applications.

This designing job wasn't done overnight. You can't produce the results our engineers were after in such a short time. Instead, these bits were put to work—and, for a number of years they have helped reduce drilling costs materially in mines, in quarries, and on construction jobs.

That's why we offer them to you now — with complete confidence in their ability to help you improve your rock-drilling cost picture.

These Features Mean Lower Drilling Costs for You

Faster Drilling Speed — Special offset gauge feature, which permits the use of thinner wings and a steeper reaming angle, greatly reduces binding and provides ample

clearance for cuttings. Result is a free, fast-cutting chiseling action that gives you greater drilling speed.

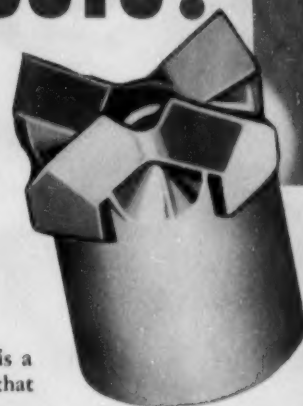
Less Drill-Steel Breakage — The method of attachment used with the CRD bit eliminates threads on the drill rod. Since a drill rod is only as strong as the root diameters of its threads, the tapered threadless CRD design provides longer drill-steel life — reduces drill-steel handling and reconditioning costs.

Lower Rock Drill Repair Costs — Because the CRD bit design reduces binding in the hole, there is less strain on the rotation parts of your rock drills. Rifle bars, rifle nuts, and chucks last longer. You get more drilling done at lower cost.

Since no special equipment is needed to thread rods, you owe it to yourself to try a can of CRD bits. They're ideal for roof bolting and for use in your stopes as well as in your headings. A short trial will give you first hand information on the ability of these bits to cut drilling costs in your property as they have in so many others.

Bulletin RD-29 gives detailed information. A copy is yours for the asking — just write for it.

RD-29

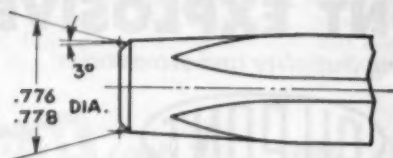


CLEVELAND ROCK DRILL DIVISION Le Roi Company

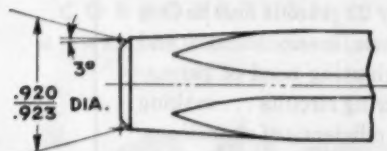
A Subsidiary of Westinghouse Air Brake Co.

12500 BERA ROAD • CLEVELAND 11, OHIO

Plants: Milwaukee, Wis. • Cleveland — Greenwich — Dunkirk, Ohio • Coldwater, Mich.



Taper shank dimensions for 7/8" steel.
Class A Bits



Taper shank dimensions for 1" hex,
1" Q.O., 1 1/8" and 1 1/4" rd. steel.
Class B Bits

The taper attachment shank used with the CRD bit is easy to make. You need no dies or other expensive threading equipment. Several simple, low-cost methods can be used for preparation — grinding, forging or machining.



MASTER throws firing switch, sending power to blasting circuits. A pilot light lets him know exactly when to fire the blast. Output terminals are dead until that moment.



30-HOLE SHOT is loaded, then connected up with Du Pont MS Delay Electric Blasting Caps. Next: setting it off with CD-32 Blasting Machine.



"TRADE-MARK" of MS Delays: well-broken limestone, a setup for quick removal. In addition, these dependable Caps reduce concussion and prevent cutoffs.

How Du Pont CD-32 Blasting Machine Increases Safety in Missouri Limestone Mine

The Independence, Mo., limestone mine of the Stewart Sand & Material Co. started using a CD-32 about a year ago, shooting 40-50 holes connected in two series in parallel. This machine has satisfied everyone concerned. Operators like the idea of having positive control over firing: that no power can reach blasting circuits *unless* and *until* they throw the firing switch . . . that if a blast must be postponed, they can discharge the machine completely by releasing the charging switch. And the CD-32, weighing only 22 pounds and having no moving parts, is easy to carry and operate, eliminating need of permanent power-firing circuits . . . making for speed and efficiency of operations.

Du Pont CD Blasting Machines are available in four sizes, to fit any blasting condition you may face.

ALL FOUR eliminate the human element of generator-type machines.

ALL FOUR contain many important safety features in the wiring and switching system.

ALL FOUR have amazingly high capacity for their weight and size.

ALL FOUR save the cost of maintaining power lines for blasting.

THE TWO LARGEST can fire shots connected in series, parallel or parallel series. For complete information on Du Pont CD Blasting Machines, contact the Du Pont Explosives representative in your district. He'll be glad to arrange a demonstration at your convenience. E. I. du Pont de Nemours & Co. (Inc.), Explosives Dept., Wilmington 98, Delaware.

1954 AMERICAN MINING CONGRESS SHOW, San Francisco Civic Auditorium—Sept. 20-23.
Be sure to visit us at Booth 801. We're looking forward to seeing you.

DU PONT EXPLOSIVES

Blasting Supplies and Accessories

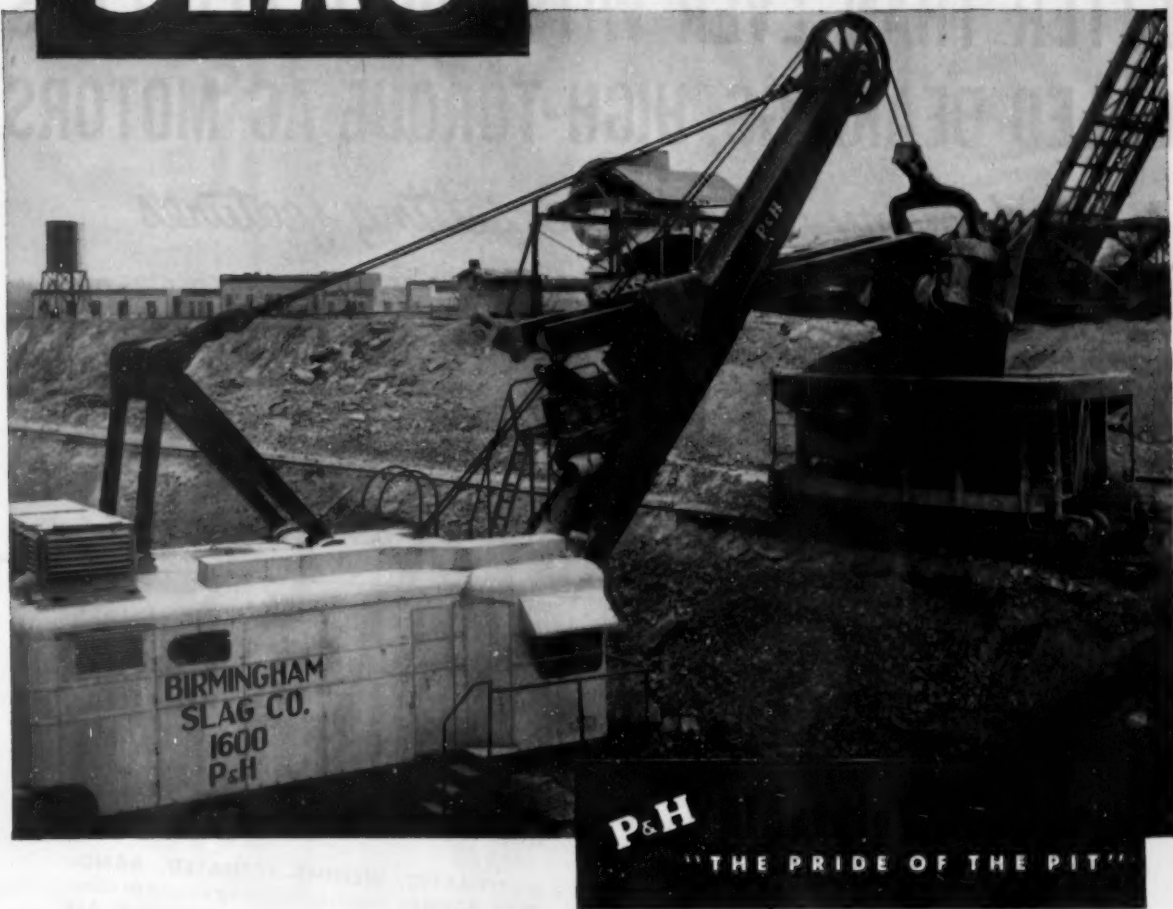


REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

SLAG

...by the carload!



Birmingham Slag Co. has just put another P&H 1600 Electric Shovel into operation!

Why does Birmingham Slag go P&H?

The reasons are clear: P&H is the one machine that can consistently dig in steamy, corrosive atmospheres . . . atmospheres like those created when water cools hot slag. P&H Magnetorque* eliminates all DC commutators in the hoist motion — the corrosion trouble spot of ordinary machines. P&H electrical system is simpler, too — designed for shovel service . . . not adapted for it!

Bail pull is another Birmingham Slag consideration. For to reclaim old slag dumps left to "air cooling" requires a machine with stamina . . . a machine capable of digging in concrete hardness and keeping it up all day long. Here, again, P&H fills the bill! For

with exclusive Magnetorque on the hoist drive, P&H Electric Shovels have the industry's highest bail pull . . . more power at the digging end — *where it's needed!*

These are the kinds of advanced features you get from P&H. Full facts are in Bulletin X-139. Send for your copy today.

*T.M. of Harnischfeger Corporation for electro-magnetic type coupling.

P&H LARGE EXCAVATOR DIVISION

HARNISCHFEGER
CORPORATION

MILWAUKEE 46, WISCONSIN

the **P&H** Line



SEPTEMBER 1954

[World Mining Section—23]

23

HERE'S THE NEW LINE

BETTER THAN EVER WITH WIDER CLUTCHES SEALED BEARINGS, HIGH-TORQUE AC MOTORS

and many other pace-setting features

WIDER, LARGER CLUTCHES Self-energizing for easy operation. Linings bear on drum hub rather than on internal clutch gear. Air space between hub and clutch gear thus effectively dissipates heat.

MINIMUM LUBE REQUIREMENTS Sealed bearings are used with adjacent grease reservoirs which supply additional lubricant as needed. Grease fittings are provided *only for the planetary gear train of each drum* (two fittings for two-drum slushers, three for three-drum).

HIGH-TORQUE AC MOTORS 500% to 620% maximum pullout torque! These motors are ideally suited for slusher service since they do not stall but merely slow down as overloads are encountered.

FORMED SHEET-STEEL ROPE GUARDS For safety, each drum is enclosed. These new, sheet metal guards are lighter and easier to handle than the cast-iron type. Removal is considerably simplified.

SIZE RANGE 15 to 75 HP. Rope pull—4,000 to 12,000 lbs.
Rope capacity—360' of $\frac{1}{2}$ " to 450' of $\frac{3}{4}$ " rope.

Plus THESE TIME-PROVED JOY FEATURES

• **EASE OF MAINTENANCE** Motor and both bearings can be removed intact without disturbing the grease in the gear box, transported to the shop, and overhauled without bringing the slusher above ground.

• **FLANGE-MOUNTED MOTORS** Your guarantee of ease in assembly and permanent perfect alignment.

• **SEPARATE PLANETARY CLUTCH GEARING**
Gives you faster tail-rope speeds.

• **AUTOMATIC, WEIGHT-ACTUATED, BAND-TYPE BRAKES** Furnish retarding action to eliminate backlash on rope while unwinding. Are free-wheeling when winding rope on drum.

Joy Slushers are produced in over 300 types and sizes—from 3 to 150 HP. Consult a Joy Engineer for the size and type best for your scraping job. • Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa. In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario.



AMSCO SCRAPERS...

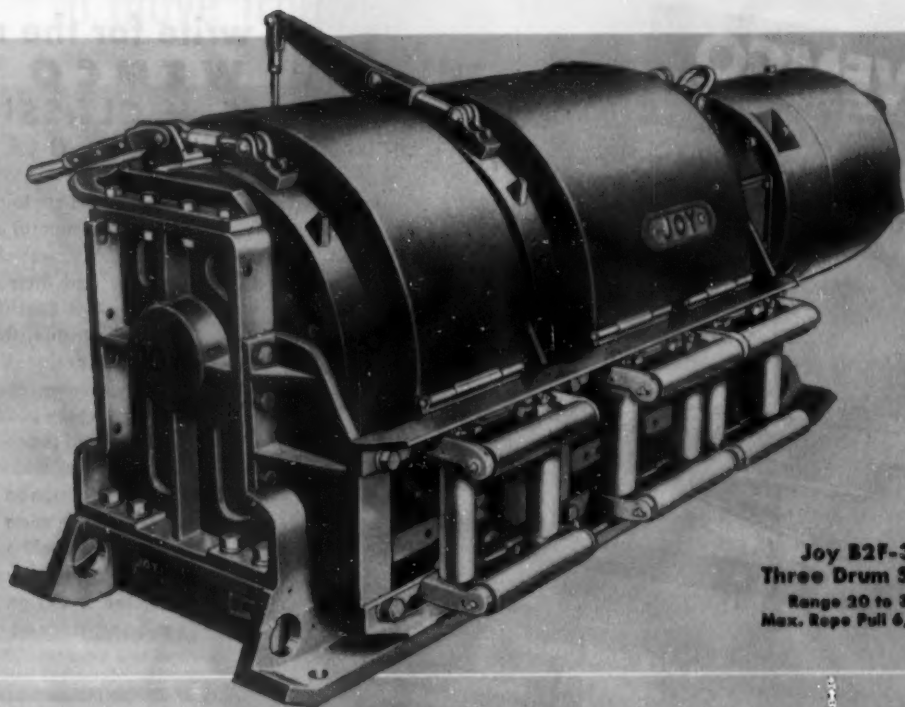
Built entirely of high (13%) manganese steel for longer life and lower maintenance. Three models—lightweight unit-type, medium weight welded-type, and heavyweight bolted-type, in sizes from 26" to 72".



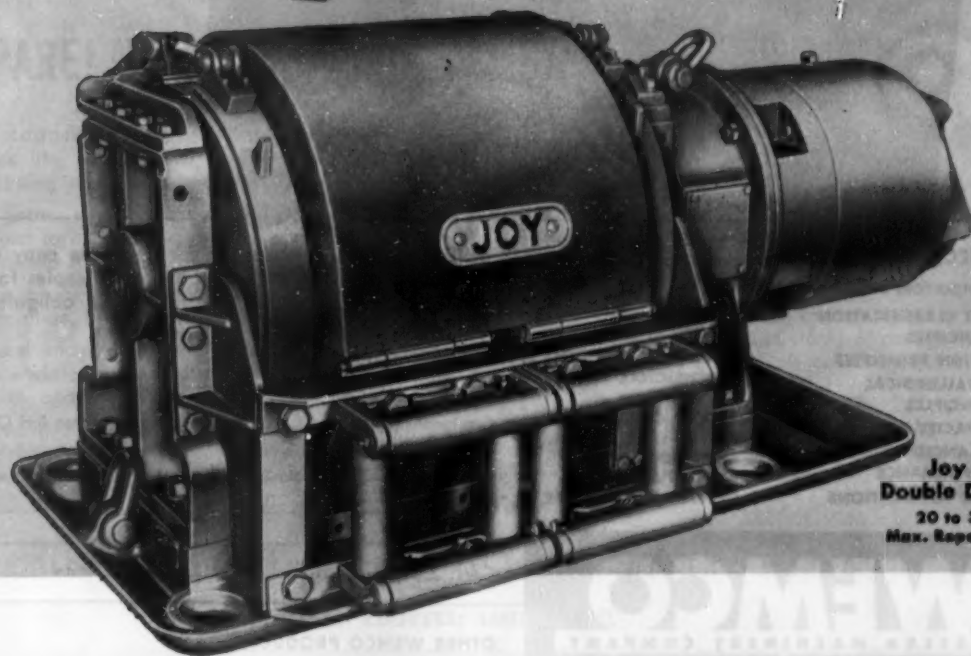
JOY QUICK-OPENING TAIL ROPE SHEAVES...

With patented "Snatchblock" construction—sealed-for-life bearings—water-tight and dust-tight bearing seals—made of heat-treated alloy steel.

OF JOY SLUSHERS



**Joy B2F-311
Three Drum Slusher**
Range 20 to 30 HP
Max. Rope Pull 6,600 lbs.



**Joy B2F-211
Double Drum Slusher**
20 to 30 HP range
Max. Rope Pull 6,600 lbs.

Consult a Joy Engineer

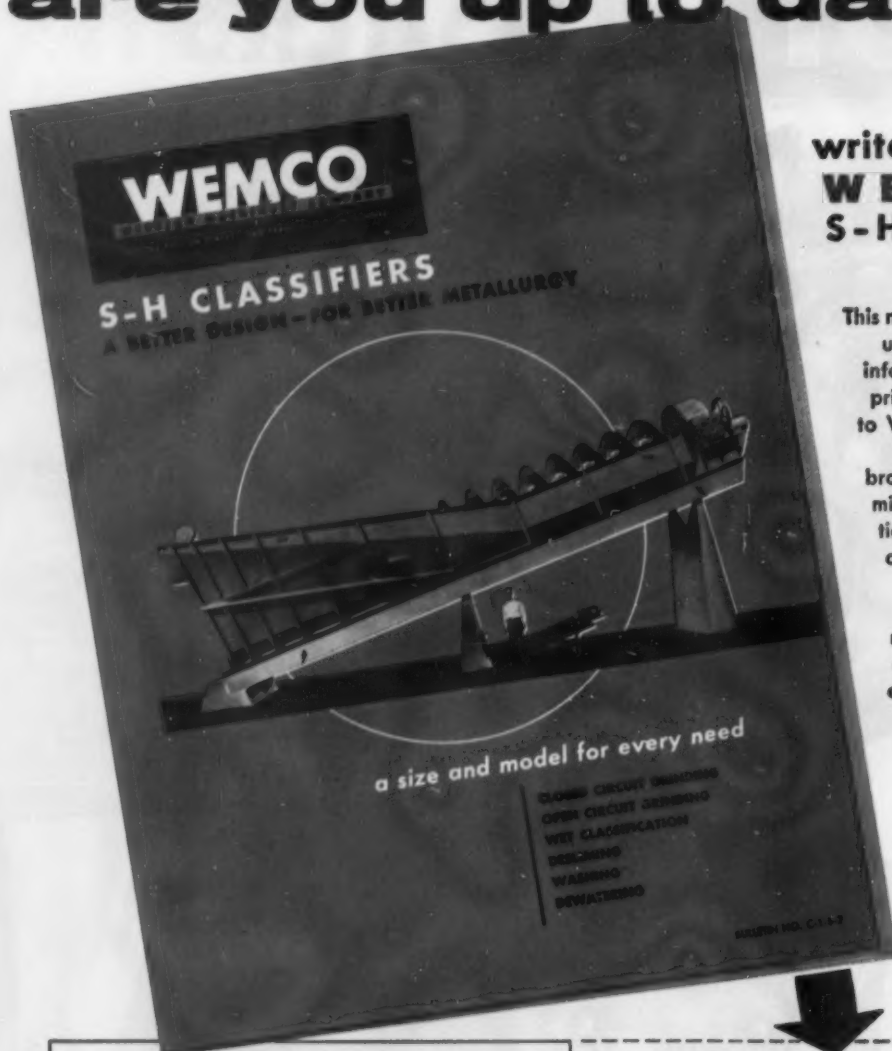
W80 M 5227



JOY

WORLD'S LARGEST MANUFACTURER OF
UNDERGROUND MINING EQUIPMENT

are you up to date?



write for the new **WEMCO** **S-H CLASSIFIER** **BULLETIN**

This new bulletin contains valuable, up to date mineral engineering information on wet classification principles and their application to Wemco S-H Classifier design.

Fully illustrated, this 20 page brochure is designed for use in mineral dressing, coal preparation, aggregate production and other related processing fields.

It provides a store of useful information for ready reference by mine managers, general and mill superintendents, metallurgical and process engineers, design engineers, millmen, students and others.

SUBJECTS COVERED — Here is a sample of some of the important subjects covered in this presentation:

- | | |
|---------------------------------|--------------------------------|
| • WET CLASSIFICATION PRINCIPLES | • DESIGN SPECIFICATIONS |
| • DESIGN PRINCIPLES | • OPERATING CONTROLS |
| • METALLURGICAL PRINCIPLES | • DIMENSIONAL DRAWINGS |
| • CAPACITY TABLES | • PROPER CHOICE OF MODELS |
| • BALANCED PERFORMANCE | • SHIPPING WEIGHTS AND VOLUMES |
| • FIELD APPLICATIONS | • OPERATING FORMULAE |

WEMCO

WESTERN MACHINERY COMPANY

760 766 FOLSOM STREET, SAN FRANCISCO 7, CALIFORNIA

REPRESENTATIVES IN PRINCIPAL CITIES OF THE UNITED STATES AND CANADA AND IN MAJOR COUNTRIES THROUGHOUT THE WORLD

WRITE NOW — just fill in coupon for your free copy of this valuable bulletin. If you would like extra copies for your associates, simply tell us how many. No obligation, of course.

WESTERN MACHINERY COMPANY
760 Folsom Street Dept. B
San Francisco 7, California

Gentlemen: Please send _____ copies of the new Wemco S-H Classifier Bulletin.

Name _____ Position _____

Company _____

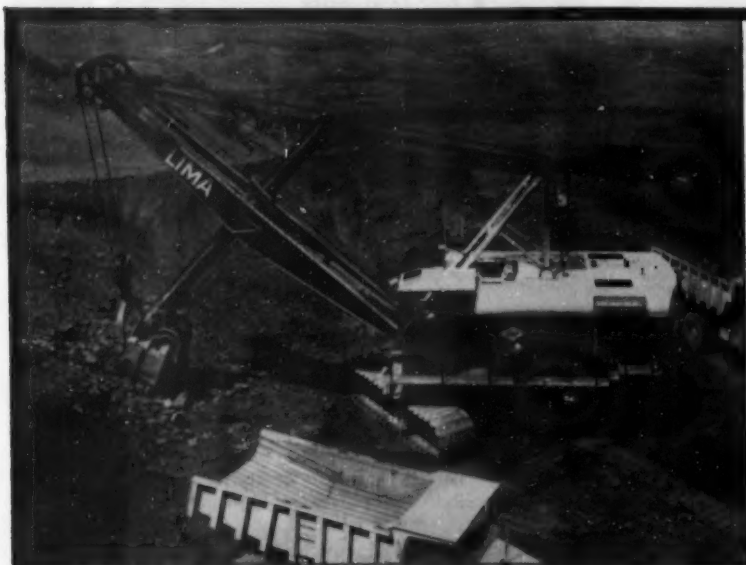
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City _____ Zone _____ State _____

OTHER WEMCO PRODUCTS:

Mobil-Mills • Cone Separators • Drum Separators • Hydroseparators
HMS Laboratory Units • Coal Spirals • Fagergren Laboratory Units
Agitators • Fagergren & Steffensen Flotation Machines • Densifiers
Dewatering Spirals • HMS Pumps • Sand Pumps • S-H Classifiers
Conditioners • Thickeners • HMS Thickeners • Attrition Machines

Orinoco Mining Company uses a **LIMA** 2400 to move iron ore at Cerro Bolivar



A LIMA 2400 being used by Orinoco Mining Company, subsidiary of U. S. Steel Corporation, to move iron ore at Cerro Bolivar in Venezuela.

In rigorous service such as that at Cerro Bolivar, the LIMA 2400 is proving to many owners in different parts of the world its ruggedness and dependability. Designed to withstand the stress and strain of heavy operations such as this, it stays on the toughest job with a minimum of maintenance.

Whether you have a mountain to move . . . or just an ordinary digging or stripping job, you can't go wrong with a LIMA Type 2400. No other machine gives you as much as Lima. It'll pay you to investigate the 2400 along with other outstanding machines in the Lima line. Call your nearby Lima distributor today, or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

COMPARE! No other machine gives you as much as LIMA!

1. Big capacity drums and sheaves lengthen cable life, by reducing the need for double wrapping and sharp bends in cable.
2. All gears, smaller parts and shafts which are subject to extra wear, are flame or induction hardened for longer life.
3. Main machinery is placed well back of center of rotation, to eliminate excess counterweight.
4. Propel and swing gears and power take-off, are enclosed in sealed oil bath for dirt elimination and smoother, quieter operation.
5. Anti-friction bearings, used at all important bearing points, reduce destructive friction, fuel consumption and lubrication requirements.
6. Bronze bushings in tread, idler and drive rollers, are protected by piston-type dirt seal rings and retainers.
7. Torque converter (optional), automatically adjusts speed to load requirements, minimizing shock loading, making performance smoother and faster. (Standard on Type 2400 shovel).
8. Wherever you are, you can depend on skilled service and nearby warehouse stocks of parts, to keep your LIMA on the job continuously.

COMPARE and you'll specify LIMA for shovels, ($\frac{3}{4}$ cu. yd. to 6 cu. yds.), cranes (to 110 tons), and draglines (variable).

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

CABLE ADDRESS: LIMASHOVEL

LIMA

SHOVELS • CRANES
DRAGLINES • PULLSHOVELS



BALDWIN-LIMA-HAMILTON CORPORATION
Construction Equipment Division
LIMA, OHIO, U.S.A.

Construction Equipment Division

Announcing

THE NEW KREBS CYCLONE...

a cylindrical two-stage classifier that gives you:

- sharper separation
- higher density underflows
- lower operating costs
- longer equipment life

ADVANCED DESIGN MEANS BETTER CLASSIFICATION

Here are design advantages that show why the Krebs cyclone does a better classifying job at less cost:

- Cylindrical two-stage design reduces undesired plus sizes in the overflow and undesired minus sizes in the underflow, produces cleaner, higher density sands **without** tramp sizes in the overflow. This is sharper separation.
- The primary cylinder creates an ideal fluid pattern that gives greater efficiency at lower psi, permits use of larger vortex finders. Reduced power requirements mean lower operating costs.
- Use of steel shells, precision-fitted with replaceable molded pure gum rubber linings — plus cylindrical design that lessens abrasive action — mean less wear, lower maintenance costs, longer equipment life.



**VARIOUS MODELS
ON EXHIBIT AT
THE MINING SHOW
BOOTH 470**

IF YOU HAVE A CLASSIFICATION PROBLEM WRITE FOR BULLETIN 121 ON THE KREBS CYCLONE.

Our pilot plant facilities and staff of mineral dressing engineers are at your service.

EQUIPMENT ENGINEERS, INC.

41 SUTTER STREET SAN FRANCISCO 4, CALIFORNIA

HERE IS BETTER CLASSIFICATION

(Number 1 of a series)

Eight Krebs Model EE10-9 cyclones, each handling 15 TPH, are installed at the plant of Crystal Silica Company, Oceanside, California. This installation was preceded by a full scale pilot plant study lasting a month. Results of pilot plant run No. 9 are given in this table.

	FEED	OVERFLOWS	UNDERFLOW
GPM	188	148	40
% Solids	32.1	8.0	80.2
TPH	18.8	3.1	15.7
% + 35	54.3		65.2
+ 65	21.0		25.3
+200	7.2	0.5	8.5
-200	17.5	99.5	1.0
	100.0	100.0	100.0

Perhaps as pertinent as the classification efficiency is the attrition action on these sands, and the wear resistance of the molded liners on such coarse feed with angular quartz particles.



IF YOU ARE INTERESTED IN **SCRAPING**



Be sure to get these latest
bulletins on Pacific Products:

Pacific Jaw Crushers Bulletin No. 114

Pacific "Slushmaster" Scrapers
Bulletins No. 253 and 254

Pacific Sheave Blocks Bulletin No. 238

Pacific Bit Knocker Bulletin No. 256

Pacific Tractor Parts Bulletin No. 257



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September 20-24

A cordial invitation is extended to all our friends to visit our booth at San Francisco. We will have on display a Model 2A-34" Pacific Slushmaster Scraper, the Pacific "Round-the-Corner" Sheave Block, all sizes of Pacific Sheave Blocks and a new, heavy-duty, manganese steel front idler for crawler type tractors. Action pictures will be on display and there will be plenty of free literature. Please do look us up!



Built for Endurance

Traylor Curved Jaw Plates outwear conventional types three to one

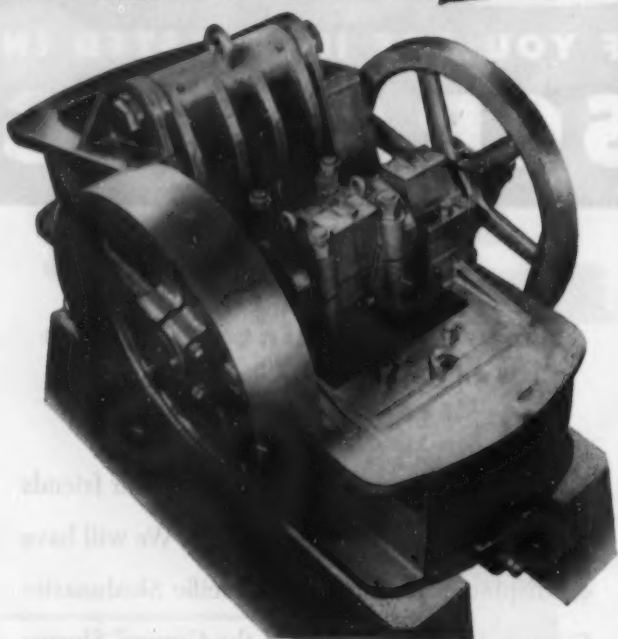
In scores of installations, the records show that Traylor Curved Jaw Plates outlast ordinary plates 3 to 1. For instance, records kept on a 36" x 48" crusher set at 4" to 5" show the average life of straight jaw plates to be 96,500 tons per set. Traylor curved Jaw Plates fitted to this crusher, and set at 3" to 3 1/2", averaged 276,724 tons.

Here's why: Traylor Curved Jaw Plates apply power as a direct crushing force. The swing jaw plate exerts power directly counter to its opposing plate. This lessens lifting and churning of material to greatly reduce plate wear. As wear does gradually occur, it is evenly distributed so that Traylor plates retain their original curved shapes indefinitely.

Although Traylor Jaw Crushers offer greater capacities . . . even at finer settings . . . they actually reduce power requirements. For the full story, clip the coupon and get our illustrated bulletin.

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TRAYLOR H and HB Jaw Crushers are made in 14 sizes. Feed openings from 8" x 12" to 56" x 72". Capacities from 4 to 640 tons per hour.



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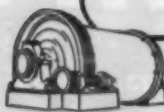
Primary Gyratory Crushers



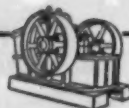
Rotary Kilns



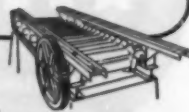
Secondary Gyratory Crushers



Ball Mills



Jaw Crushers

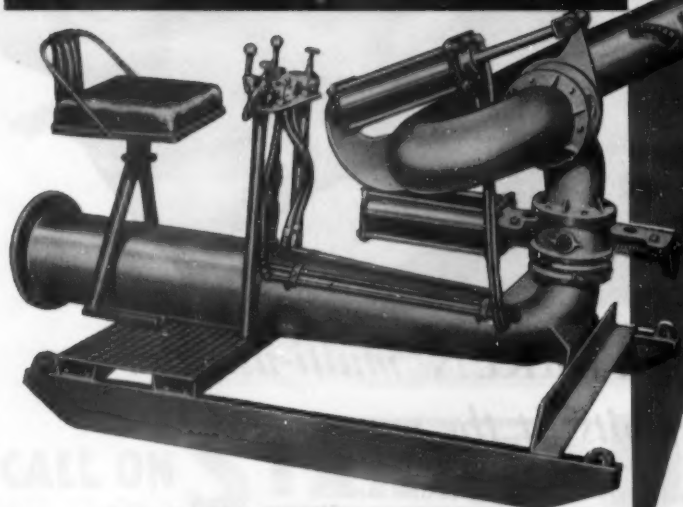


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CHIKSAN
intelli-Giant



The CHIKSAN company's origin dates back to their gold mining operations in KOREA in 1906. The very name CHIKSAN means mountain of gold in Korean.

Today they again enter the mining industry with the introduction of INTELLI-GIANT the most revolutionary improvement the hydraulic world has witnessed in the past 90 years.

Increased efficiency and economy in extracting gold by moving dirt with water has been an objective of hydraulic mining engineers for nearly a century.

Now higher levels of production and lower costs are at long last made possible with INTELLI-GIANT. Exacting tests in the removal of ice-frost in Alaska, sluicing in the phosphate fields of Florida, dam construction in Oregon and California, all have shown the high efficiency and extreme economy of INTELLI-GIANT.

CHIKSAN COMPANY Brea, California

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SEPTEMBER 1954

[World Mining Section—31]

31

SPEED UP DRILLING!

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*Dozens of different TIMKEN® multi-use and
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NO time wasted going after a different set of steels every time your men need a different bit type! They can unscrew one type of Timken® rock bit and screw a different type on the same drill steel. Think how much this time saving will speed up your operation.

Timken interchangeable rock bits give you additional savings, too. Your men can switch to the most economical bit as the ground changes—right on the job. And because dozens of different Timken multi-use and carbide insert bits fit the same steel, you don't have to stock a large

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Both Timken multi-use and carbide insert bits are made from electric furnace Timken fine alloy steel. They have the shoulder union that we designed to keep drilling impact from damaging threads.

Our rock bit engineers are experts at cutting drilling costs. Why not let them analyze your problems? There's no obligation. Write: The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

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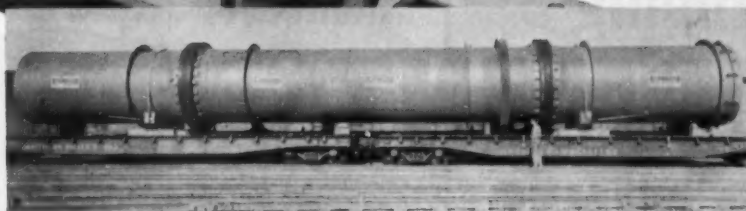
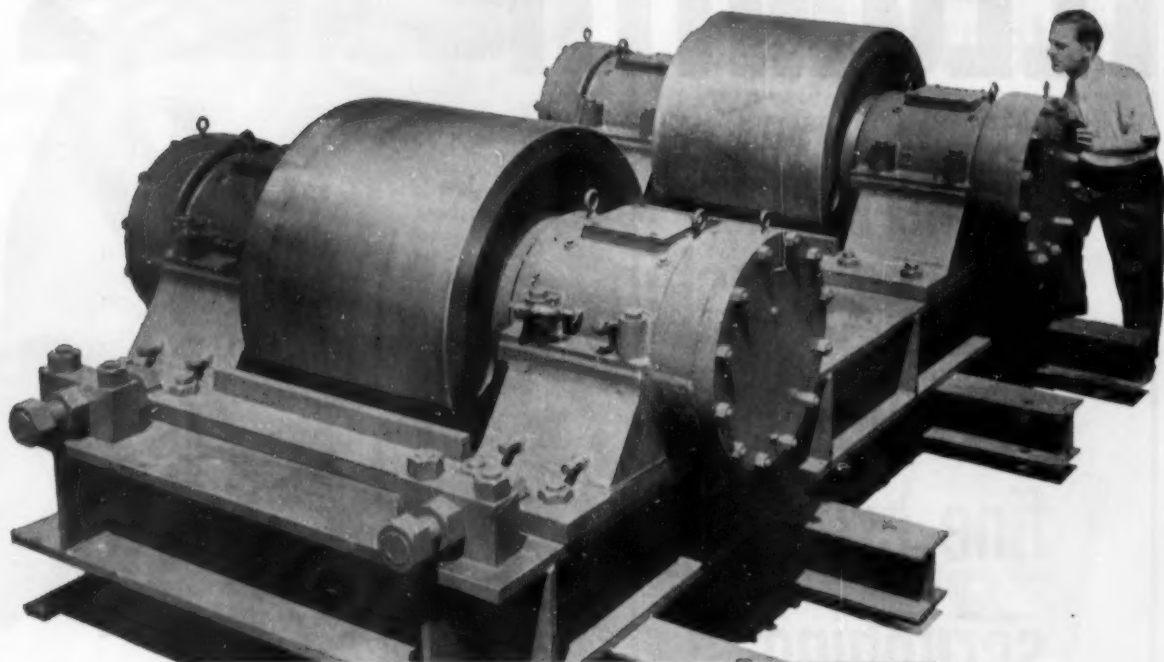
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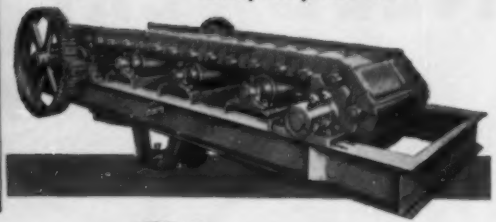
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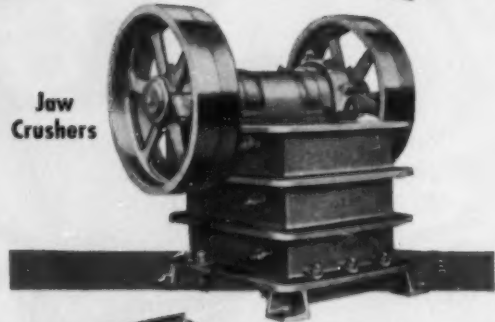
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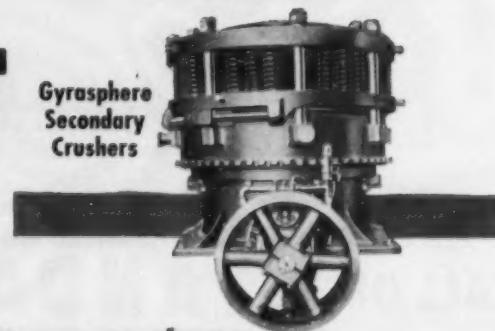
Jaw
Crushers



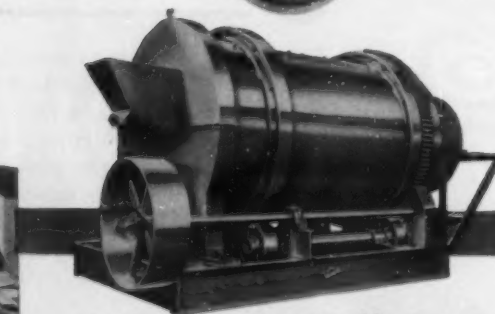
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*Latest data from
Western Precipitation
on Cottrell Recovery Equipment*

Do you have operations in your plant where gas-laden suspensions, wet or dry, are a problem? Such suspensions may be dropping on surrounding property, causing nuisance difficulties.

Or perhaps important values are being lost in stack gases that can be profitably recovered.

Whatever the nature of your recovery requirements, you will find this 40-page Cottrell booklet of great help. It contains up-to-date data on the latest advancements in the electrical precipitation field - prepared by the organization that pioneered the commercial application of Cottrell Electrical Precipitators almost a half century ago and has consistently led in new Cottrell developments.

A copy of this data-packed booklet will be sent free to engineers and other executives interested in recovery processes. Send your request to our nearest office.

For nearly 50 years Western Precipitation has carried on a continuous research and development program on Cottrell Electrical Precipitators, Multiclone Mechanical Collectors and other types of recovery equipment. We are not affiliated with any other company in the electrical precipitation field except our wholly owned subsidiaries, International Precipitation Corporation and the Precipitation Company of Canada, Ltd. We are equipped to serve you anywhere in the United States, Canada, and throughout the world!

40 PAGES of helpful information

on Recovering Dusts, Fly Ash,
Mists, Fumes and other Sus-
pensions from Gases.

This booklet summarizes

the important points design and plant engineers
should know about Cottrell Precipitators . . .



- Basic types of Cottrell equipment.
- Principal elements in a Cottrell unit.
- Data on Mechanical and Electronic Rectifiers.
- Various types of Collecting Electrodes (rod curtains, corrugated plates, pocket electrodes, etc.).
- Typical ways of removing collected material.
- Various Shell Constructions (steel, concrete, brick, etc.).
- The effect of various factors on efficiency and performance.
- Data on CMP (Combination Multiclone-Precipitator) Units.

. . . and many other helpful facts on Cottrell design and operation.

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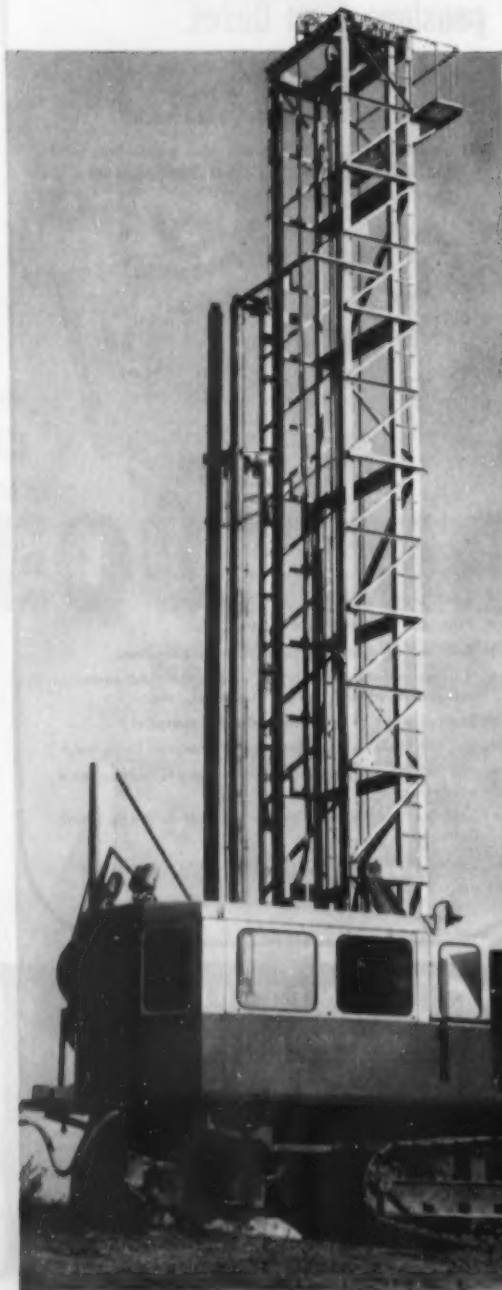
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BUCYRUS-ERIE

50-R



For the first time, the flexibility of Ward Leonard control is available in a rotary blast hole drill — the outstanding, new Bucyrus-Erie 50-R. This modern variable-voltage control gives the operator smooth instant command over rotation of the drill pipe. He can choose the most efficient speed for a given formation — can vary the speed as required without stopping the drilling operation. In hard formations with maximum down pressure exerted on the bit, the rotary drive will average about 40 RPM. In drilling softer materials, rotating speed can be increased substantially as down pressure is automatically reduced.

The flexibility of Ward Leonard control is also available on the 50-R for propelling, and for hoisting and lowering of the derrick machinery. It brings maximum efficiency and ease to these operations.

Ward Leonard control is only one of many outstanding 50-R features designed to save you time and money in your blast hole drilling operations. Get the complete story — write today!

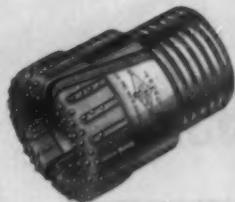
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visit Booth 911. Our representatives there will be glad to give you full details on the outstanding 50-R.

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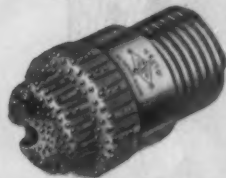
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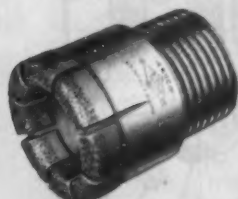
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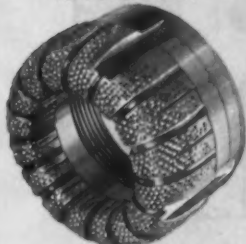
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The Charm of Booie, The Witch Doctor

Booie, the Kaffir witch doctor, didn't want to part with the charm. Often he had made big magic with it in his ceremonial dances and without it he might lose face. And, didn't it have miraculous powers?

Schalk van Niekirk, the old Boer trader, thought so—at least it had the power to make him a very wealthy man, for this pebble was four times the size of the one he had sold two years before.

So, all day long they haggled and Schalk brewed pot after pot of Dutch coffee, heavy with sugar, well flavored with a magical potion from a stone bottle and served it with the free hand of a man who feels a fortune tickling his fingertips.

Finally, he stood up, stamped out the fire and said, "Booie, come to my kraal and I will give you 500 sheep, 10 oxen, and a horse—I have nothing more." Booie held out his hand; suddenly, he was incredibly rich.

Schalk sold the big diamond—it weighed $83\frac{1}{2}$ carats—for \$56,000, a handsome fortune in 1870. In London, after cutting to $46\frac{1}{2}$ carats, it proved to be of the finest color and brilliance, and the Countess of Dudley gladly paid \$125,000 for it. In her tiara it became "The famous Dudley Diamond."

Diamonds are precious in drilling, too, because they provide the vital, time-saving, cost-reducing element in Truco Diamond Bits. They assure that irresistible cutting power which takes Trucos through any formation, swiftly, accurately, thriftily, dependably. Have you consulted your Truco Diamond Bit Catalog lately?

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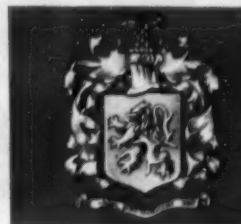
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keeping air pressure UP THOUSANDS of feet DOWN

At the Silver Summit Mine in Osburn, Idaho, in a vaulted room more than 1,000 feet below the surface, an Ingersoll-Rand PRE compressor (shown below) converts electric power into air power used to help tear silver, copper and lead ores from the earth.

This epic and span installation, shown below, is reached through a tunnel 6,000 feet long. The 400-hp compressor provides air for mine workings as far as 3,400 feet below it.

Placing the compressor underground has two advantages: First, it eliminates costly piping that otherwise would be necessary to transmit compressed air more than a mile from a surface plant to the working shaft. Second, it avoids air pressure losses that would be caused by leakage and the friction of air passing through a mile-long pipe.

This is not the first underground PRE installation for the Hecla Mining Company whose management controls the operation of Silver Summit Mining Co. It had previously relocated one unit at its Star Mine from the surface plant to an underground station where it also installed a new PRE. This step eliminated the surface plant and the pressure losses formerly caused by 11,000 feet of air piping. Several other I-R compressors have been serving Hecla's older properties for more than 30 years.

Long recognized as a leader in using modern mining equipment to increase production, Hecla mines employ many Jackhammers, drifters, Jackbits, hoists, pumps, and other I-R products.



FEATURES OF THE "PRE" COMPRESSOR

- Crankcase need not be opened for bearing adjustments . . . stays clean.
- Main bearings have micrometer adjustment from outside of crankcase.
- Full-floating crankpin and crosshead-pin bearings result in long bearing life.
- Unique, built-in, force-feed running gear lubrication eliminates piping both inside and outside compressor.
- I-R stainless-steel Channel Valves are efficient and durable.
- Automatic 5-step full Clearance Control regulates compressor output.
- Built for continuous full-load operation . . . for air or any gas . . . for any pressure . . . sizes from 300 to 3000 hp.

861-1

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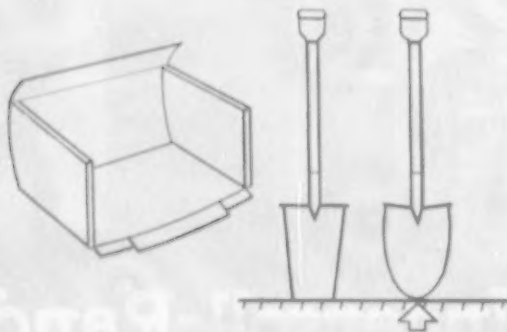
SEPTEMBER 1954

Compare these dirt-



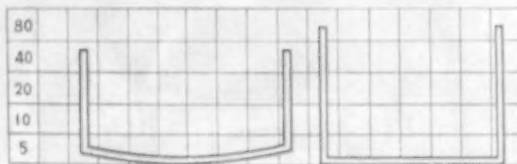
PENETRATES FASTER

Curved and offset cutting edge on Allis-Chalmers Motor Scrapers concentrates all the horsepower on the center section during initial penetration. The penetrating ability of a round-end spade helps illustrate the practical soundness of this Allis-Chalmers design.



LOADS FASTER

Low, wide bowl plays an extremely important part in ease of loading. Tests have proved that loading resistance is largely determined by the height to which the load is built. New dirt entering the bowl must lift the load directly above it in order to make room for itself.



This chart shows how loading resistance continually increases as the load builds up . . . how the lower, wider bowl of an Allis-Chalmers Motor Scraper requires less time and power to get the same yardage.

PERFORMANCE MAKES DOLLARS

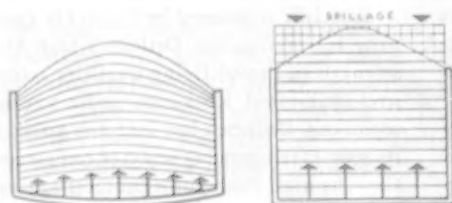
moving features before you buy

Check over these Allis-Chalmers TS-200 Motor Scraper features point by point. See for yourself the sound reasoning behind its design. Then let your Allis-Chalmers dealer show you one at work. Compare it feature for feature, yard for yard and dollar for dollar with any other machine in its class. We believe you'll agree that an Allis-Chalmers Motor Scraper is the *number one* earth-moving value.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

HEAPS AUTOMATICALLY

The combination of slightly deeper center cut and correctly angled cutting edge shapes the load as the scraper fills. The greater volume of dirt flowing into the center of the bowl "boils" forward, to the rear and to the sides, producing an automatically heaped load without excessive spillage.



These diagrams show how an automatically heaped load avoids costly spillage even though the center is built up above the sides of the bowl.

SPREADS EVENLY

Forward movement of ejector is timed with lifting action of apron, which provides a continuous flow of material to insure a smooth, even spread.



High apron lift prevents any possibility of material's jamming. Even when loaded from overhead, anything that can be put into the bowl can be easily ejected.

WHEN DESIGN MAKES SENSE



"... drillers insist on Union's **DRILLUBE**"



J. Irving Crowell, Jr., Beatty, Nevada

"I suppose the big reason why my drillers insist on Union's Drillube is that air drills lubricated with it don't fog or give off sickening oil fumes.

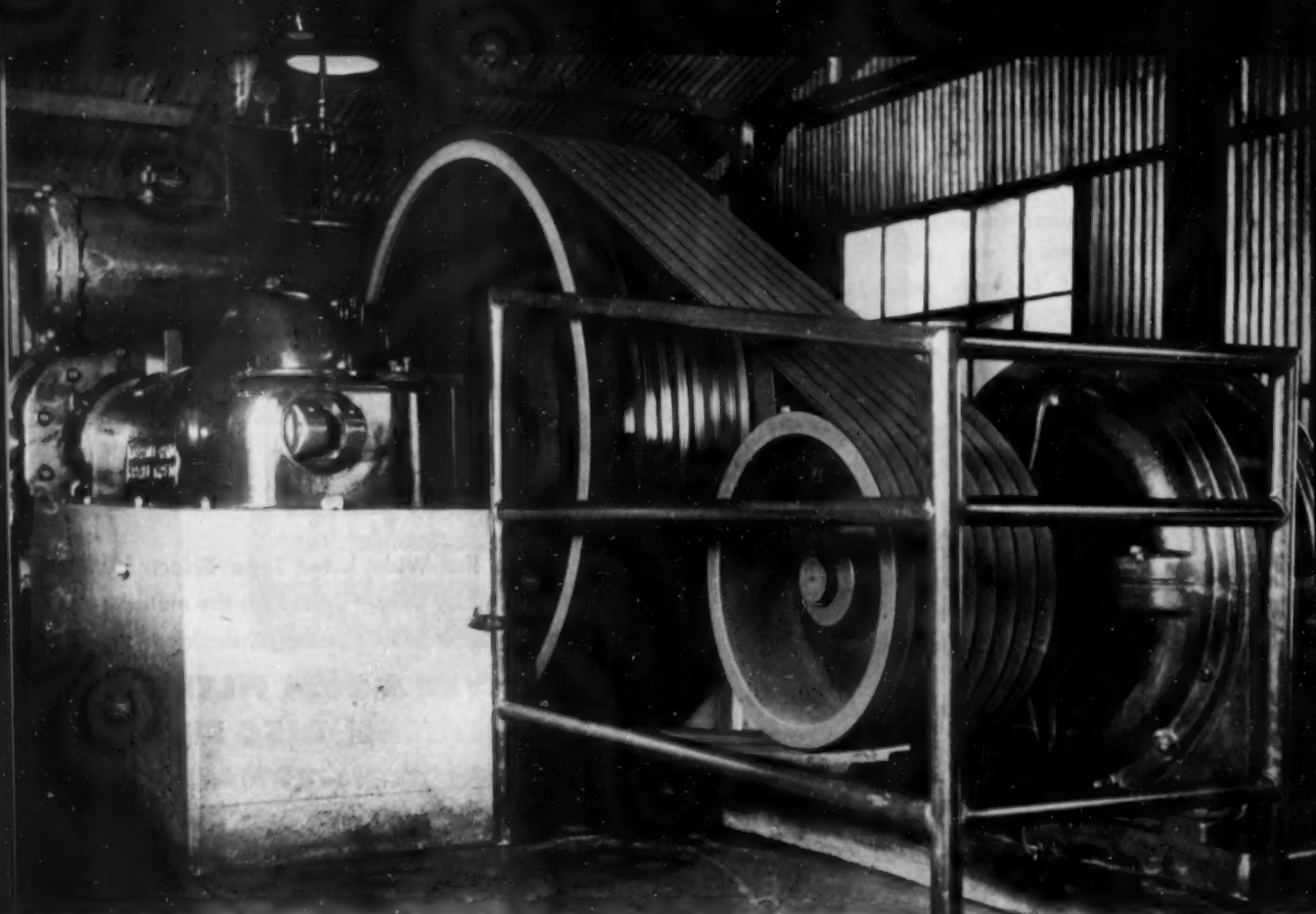
"Although that reason alone would amply justify its use in our fluorspar mine, I've found that Drillube's fine protective qualities keep our pneumatic equipment in excellent condition with a minimum of maintenance expense and parts replacement."

Especially engineered by Union Oil Company for mining use, Drillube's high film strength and emulsifying qualities assure steel-against-steel lubrication under wet air conditions. Drillube's low cold test makes it resistant to refrigerating action of compressed air... its high flash point protects against ignition in service. Your local Union Oil representative can supply you. Why not order Drillube for your air equipment today?

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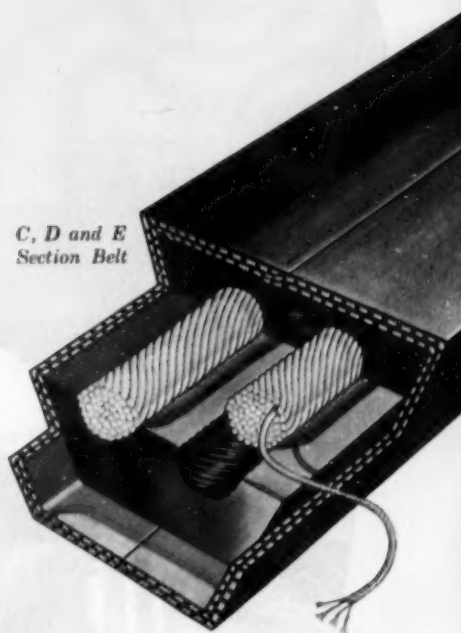
Thermoid Multi-V Belts cut operating costs



There's a Thermoid V-Belt for every mining application. Every belt is *pre-stretched* to provide longer service and maximum power transmission without slippage. Thermoid C, D and E sections are rayon-grommeted for brute strength and extra flexibility that withstands repeated shock loads. The entire belt is vulcanized into a solid unit that resists moisture, abrasion, internal friction and heat.

Get longer wear with less maintenance . . . cut your operating costs with Thermoid Multi-V Belts. To meet the exacting requirements of mining service, your Thermoid Distributor carries a complete line of Thermoid Multi-V Belts, Hose and Conveyor Belting. Call him or write direct for complete information.

C, D and E
Section Belt



Thermoid

Western Co.

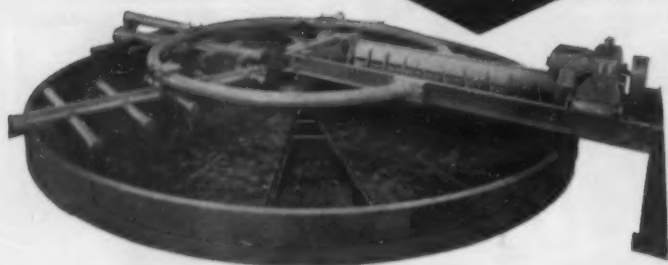


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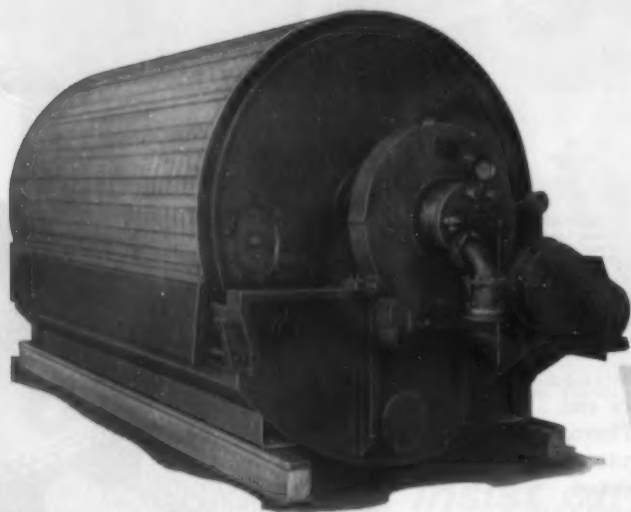
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Note the Wide Filter Type Selectivity offered by Oliver United for the metallic and non-metallic mining industries:

OLIVER DRUM FILTER
AMERICAN DISC FILTER
DORRCO INTERNAL
DRUM FILTER
OLIVER HORIZONTAL
FILTER

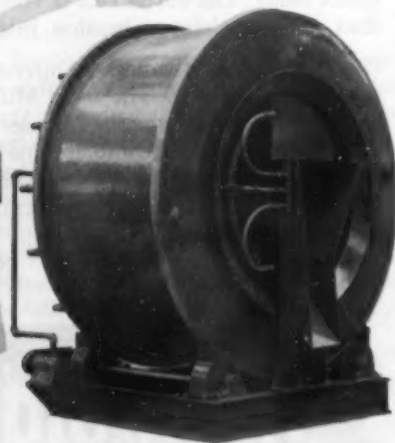
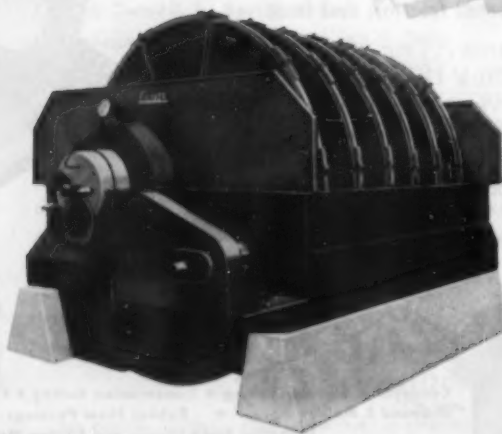
plus other types such as Sweetland and Kelly Pressure Filters, Oliver Panel and Precoat Filters, Oliver Pressure Filter.



★ *Make a note when in our booth to ask about our Olivite Acid-Handling and Oliver Type L Chemical Slurry Pump. They're doing some excellent work in industry.*



Our General Mining Catalog M-20 gives details of our ore filters. Send for your copy if you do not attend the convention.



FILTERS

BOOTH 462

**MINING SHOW
SAN FRANCISCO**

September 20-23



We'll be at San Francisco with 'to scale' models of the American Disc and Oliver Horizontal Filters. We shall also exhibit a full size 10" Centriclone, cut away to disclose the internal design and mechanism. In attendance, of course, will be competent filtration specialists with lots of ore milling experience.

Why not drop in and discuss your filtration and separation problems? One important fact to keep in mind about Oliver United, its filters and service, is that it offers the widest variety of filter types, each in a wide range of sizes, from which to select. Take the four filters illustrated at the left. Each offers distinctly different filtering values. If none of these fits your picture, we can call on several other types, five of which are listed. Each of these, too, offers distinctly different filtering values.

As for experience, where would you most likely obtain the best filtration advice when selecting the most suitable type of filter? Wouldn't it be from Oliver United where you know there is a wide choice in filter types and where you know you can get filtration advice that is based on service to the mining industry going back nearly fifty years and covering every major mining district in the world?

The Oliver Centriclone is a combination liquid cyclone-centrifugal type of separator, capable of producing sharp separation of fine-coarse, light-heavy particles at any predetermined separation line. It's also very effective as a thickener. Size separations down to 10 microns size. Can operate at very high densities thus avoiding costly dilution.



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SEPTEMBER 1954

Tanganyika Elephants
couldn't tear this up!
...SWECO saw to that



The threat of marauding elephants was just one of literally thousands of details considered by SWECO in designing, engineering and procuring more than \$2,000,000 worth of equipment, materials and supplies for the complete 1,200 ton/day lead-copper concentrator of Uruwira Minerals, Ltd. . . . 800 miles inland, in the bush of Tanganyika, Africa. Water is piped 43 miles to the project from the Ugalla River, over rough terrain, varying 1000 feet in elevation. The water pipes and two 500,000 gallon reservoirs are buried to protect them from thirsty elephants during drought seasons. Water supply was one of many problems which SWECO engineers solved in setting up complete, integrated plans and specifications for concentration mill, utility services and all off-site facilities—a 2000 kw power plant—a village for 5000 workers, complete with housing, school, hospital—attractive California-style three-bedroom houses for 200 supervisory personnel and their families. SWECO specified, purchased and coordinated shipping of more than 3,000 tons of equipment and supplies from all parts of the United States, everything from structural steel and forming lumber to hand tools and nails. The thoroughness, speed and efficiency with which SWECO handled the Uruwira Minerals project are the result of 30 years of engineering, construction and manufacturing services to process industries throughout the world.

Send for bulletin giving details of SWECO
engineering-construction and manufacturing services.

Under construction in Central Africa

This perspective drawing shows part of the integrated lead-copper mine, mill and off-site facilities engineered by SWECO for Uruwira Minerals, Ltd., at Mpanda, Tanganyika, Africa:

- | | |
|---|---|
| 1 Hoist house | 10 Shops |
| 2 120' headframe | 11 Main office |
| 3 Jaw crusher | 12 Survey office |
| 4 Cone crusher | 13 2000 kw power plant |
| 5 3000 ton ore storage | 14 Change house |
| 6 SWECO designed heavy media separation | 15 Tailings conveyor |
| 7 Grinding and flotation | 16 Reservoir |
| 8 Concentrate storage | 17 Village for 5000 workers |
| 9 Warehouse | 18 Housing for 200 personnel and families |

Sweco engineering team (above)

This project group evaluated preliminary flow-sheets, developed detailed plans and specifications, procured and supervised the shipping of all materials required to create the big Uruwira lead-copper mill and a complete new town.



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In 1947, Dings furnished the first high intensity "cobbing" separators to handle ball and rod mill feeds which precede the finisher separators.

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- No underwater spray pipes. Water manifold provides uniform washing of concentrates *above* the water level—overcomes operators' objection to submerged sprays.

- Tailings discharged with overflow. This unique feature permits discharge by means of overflow, without passing through the incoming feed—maintains constant submergence of the drum, with no spigot discharges being required. Dings double drum separators consistently produce lower iron tailings.

- More compact. Dings unit is more compact, yet readily accessible for easier operation and extremely low maintenance.

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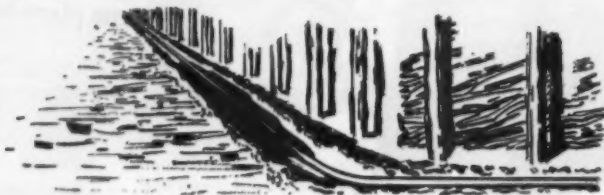
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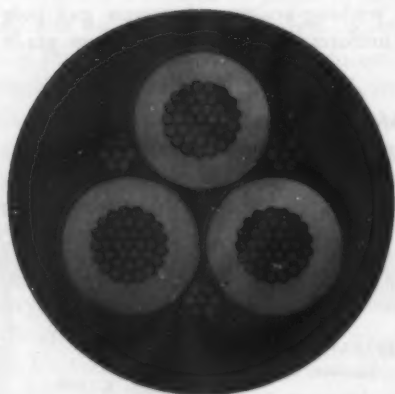


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MINING WORLD

— Drifts and Crosscuts —

Thank Your Congressional Representative—Every one in the mineral industries—from prospector to president—should write letters of appreciation to every member of his state's Congressional delegation for the effective support they have given the mining industry in the recent session of Congress.

Party affiliation meant nothing when they voted. The issues were above and beyond party politics. Their votes will make it possible to develop more mineral resources right here in the United States; their votes will make it economically possible to produce more strategic minerals; and, most importantly, their votes will give new life blood to the free enterprise system which has made private ownership of minerals possible and resulted in the most productive and efficient minerals industries in the world—minerals industries which are the foundation for continuing world peace.

Here are the highlights of what the 83rd Congress, Second Session, has done to aid the domestic mining industry:

Broadened and raised percentage depletion.

Raised the allowable mine exploration deduction for tax purposes.

Clarified the status of many uranium claims.

Banned research and development of foreign minerals with Foreign Aid Funds.

Greatest benefits are incorporated in the Tax Revision Bill known as the Revenue Code of 1954. It is a well known fact that certain uranium mines have not been operated at capacity because of the unfavorable tax situation. Inclusion of uranium at a 23 percent depletion rate will mean that production will be increased at no penalty to the mine operator and also that lower grade ores can be mined.

Many other metals and minerals received the 23 percent figure and the Bill also raises nonmetallic minerals depletion from 5 to 15 percent.

Mine exploration expenses which may be deductible as a current or deferrable charge in one year were raised from \$75,000 to \$100,000.

Passing of S. 3344 clarified the status of conflicting mining locations on the Colorado Plateau and elsewhere without destroying the basic mining laws of 1872. Because of the number of oil and gas leases in conflict with uranium mining claims it was necessary for the mining industry through the Colorado Plateau Uranium Committee, the uranium producers, and the several State mining associations to work out a compromise with the oil industry to secure passage of the Bill.

It may be said that the uranium mining industry gained the most from the Bill as it had the greatest interest at stake and fought hardest for the Bill. However, the miner loses certain rights which he had under the laws of 1872 on future claim locations.

The least publicized action, (and that was by the Senate) banning an overseas research and development program may be of greater importance to the domestic mining industry in the future than any of the other new laws. With the existing over-production of many metals and minerals, any additional governmental assistance to foreign mining could only have an adverse effect on domestic mining now and in the future.

U. S. Bureau of Mines Reorganization—Interior Secretary Douglas McKay has approved, in general, the rec-

ommendations of his five-man survey team calling for reorganization of the Bureau.

It is not surprising that the team recommended strengthening of the activities that the Bureau has long been accomplishing with greatest efficiency. These include: collection and issuance of statistical reports on minerals; health, safety, and coal mine inspections; and normal research programs.

Certainly the mining industry will benefit from these particular recommendations. In regard to statistics, the Bureau has speeded collection and release of all state mineral production figures through the existing Regional offices. Whatever the Region reorganization may be, it is hoped that this effective work be continued and expanded.

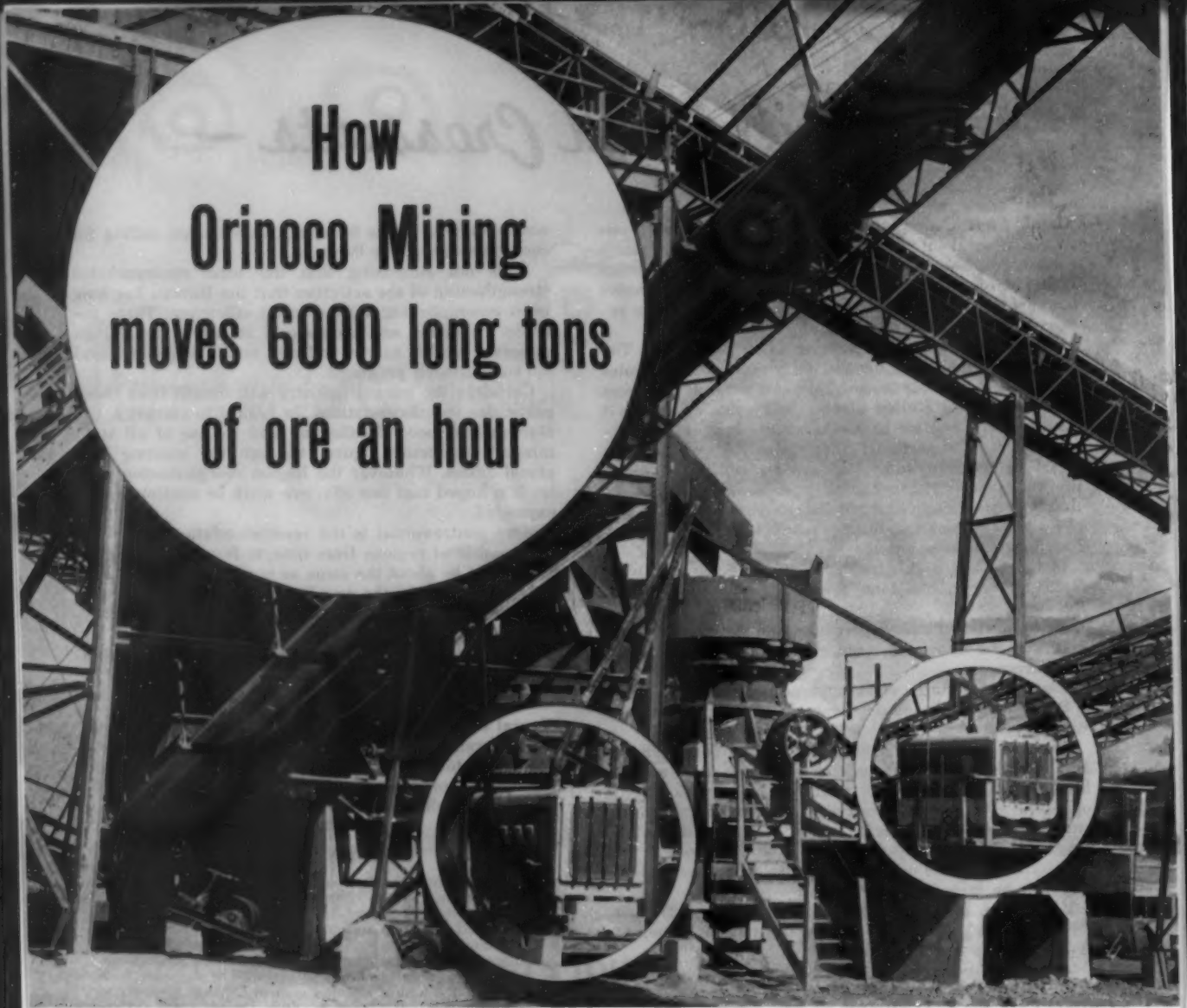
More controversial is the recommendation to reduce the number of regions from nine to four. In the end it well might be about the same as now but with different titles. For example, the new Region 1 with headquarters in Reno, Nevada would surely have to have a deputy Regional Director in Alaska. It is not right or proper for the Alaskan miners to have to go to Reno to get a Bureau recommendation or decision.

Mineral Policy Outlined—The need for a national metals and minerals policy has long been self-evident. United States Senator George W. Malone as chairman of the Senate Subcommittee on Minerals and Metals has outlined such a policy with 12 main points:

1. Closest cooperation between nations of Western Hemisphere.
2. That Congress insure conformation of principles of the Constitution's Article 1, Section 8.
3. Remove dependency on remote areas for critical minerals.
4. Increased depletion for minerals as production incentive.
5. Acceleration of stockpiling to insure a "going concern" mining industry in Western Hemisphere.
6. Studies to assure maximum availability of domestic fuels.
7. Increase titanium production goal to 150,000 annual tons.
8. Adequate goals for uranium production to meet military and civilian requirements.
9. Review of the work of the Securities and Exchange Commission.
10. Congressional determination of stockpiling duties among (approximately 38) government agencies.
11. Establish laboratory to study substitutes for critical materials.
12. Congress should have control over all International agreements affecting critical materials.

This is the best program outlined to date. It deserves the support of all the Americas.

Metal Markets—Mercury—if you can get it—will soon be available in a new type bottle. . . . Steel flasks each holding about 76 pounds and the standard unit for mercury output, buying, and selling, are being replaced by some sellers. . . . The new container is an eight-ounce-capacity unbreakable polyethylene bottle holding 6.5 pounds of mercury. . . . Ease of handling and pouring is the reason given for adaption of the new bottle. . . . [Synthetic mica production continues to increase. . . . Wider applications are being found daily. . . . Newest electrical insulation calls for grinding the synthetic product and then sintering the powder into sheets instead of trying to split it into thin leaves as is done with the natural mica.



How Orinoco Mining moves 6000 long tons of ore an hour

Here are two CAT* Diesels helping crush an iron mountain. This team of D17000 and D13000 Engines drives secondary 30" x 70" gyratory crushers for Orinoco Mining Co. in Venezuela. A 60" belt conveyor, traveling 600 feet per minute, delivers ore to this crushing plant from a primary crusher driven by a D364 Diesel Engine. Power for conveyor belts and lights is supplied by Caterpillar Electric Sets.

The iron is the first taken from deposits recently unearthed on Cerro Bolivar, an 1800-foot mountain packed with some 400 million tons of high-grade ore. To get this prize ore to mills, Orinoco Mining built a port to handle ocean-going freighters, put down over 90 miles of railroad and paralleling highway, and raised two complete towns. More than 150 Caterpillar units—engines, electric sets, tractors, scrapers, motor graders, bulldozers—worked on the gigantic job.

Today 6000 long tons of ore an hour—three million tons a year—move down from Cerro Bolivar. Soon shipments will total ten million tons a year. Helping move every ton are Caterpillar units like the engines in the picture. Their specially hardened crankshaft journals, long-lived

aluminum alloy bearings, truly effective filters and seals, and other quality features will help keep ore coming from Cerro Bolivar for years. And they'll do it economically, too: Caterpillar-built fuel injection systems let all Cat Diesels deliver full power on low-cost No. 2 furnace oil.

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CAPITOL CONCENTRATES

WHAT WILL PRESIDENT DO ABOUT LEAD-ZINC TARIFF?

President Eisenhower asked for a 60-day extension of time on July 19 in which to make his decision on whether or not to increase lead-zinc tariffs. Why? The explanation given is that the President's economists are trying to figure out some way to help the industry, which will not involve raising tariffs or applying import quotas, and which will not cost as much as buying up all the surplus metal to force the price up to a point where domestic producers can live.

The President truly is on a hot spot. Should he approve higher tariffs, it is not unlikely that Canada and Mexico will retaliate. Canada threatened to do so during the Simpson bill fight. Should he reject the Tariff Commission's recommendations without coming up with a sound plan which will put the lead-zinc industry on its feet and permit reopening at least some of the closed mines, Western Senators and Representatives will be further outraged—and voters may retaliate next November. No wonder the President has asked for more time to study the various sharp horns of his dilemma!

It would not be too surprising if the economists came up with some sort of a "Brannan" plan similar to the one the White House recommended to get off the spot in the wool situation.

• Where Is Mineral Policy Report?

Where is the long overdue report of the President's Mineral Policy Committee?

Washington rumors say that Assistant Secretary for Mineral Resources Felix Wormser (who is the chairman of the committee in fact, though not in name) has tried to swing the task force members in the direction of recommending tariff increases to cure the lead-zinc industry's ailments. Such action is clearly against the Administration's general policy, and Interior Secretary McKay (the actual chairman of the Mineral Policy Committee) testified against the Simpson sliding-scale tariff bill.

One would guess that the PMPC report may have been held up in the first place to see what the Tariff Commission's recommendations might be, then secondly to see what the President's decision on those recommendations might be. And now, the chances are, the committee has been unable to come up with a satisfactory plan which will reasonably suit all factions.

• FOA Denied Funds For Foreign Mines

Senator George W. Malone of Nevada, on July 30, won another victory for the mining industry of the United States when the Senate passed his amendment to the Mutual Security Act. The amendment deleted the section which would have permitted the President to initiate projects for promoting the production of strategic minerals in foreign countries.

Senator Malone maintained that it would be little short of national suicide for the United States to continue to rely on critical materials from the Old World,

and to continue to develop Old World sources of supply, when we know that shipments from these mines would be cut off immediately in the event of war. It is inexcusable from every angle of national defense and national economy, he said, to permit the mining industry of the United States to deteriorate and at the same time help to develop the mines of foreign countries which would be useless to us in time of war.

Washington observers considered it quite extraordinary that the amendment passed since Majority Leader Knowland stated that the White House wanted the section retained. True, the vote was fairly close, 49 to 35, but sufficient to show that some people are getting tired of the Foreign Operations Administration's setting up competition to domestic industry.

• Greater Italian Output May Be Sought

Immediately following the issuance of the United States-Mexican purchase directive for mercury for the long-term stockpile program (in which ODM set a ceiling price of \$225 per flask against the New York market price of \$290), news reports were current that a United States mission may shortly have a conference with Italian officials to persuade them to increase Italian production. But not by offering contracts at below market or cost-of-production prices, you may be sure!

• Watch-Makers Granted Tariff Increase

Under the heading of the "you-never-can-tell" department comes the announcement that President Eisenhower has approved the recommendations of the Tariff Commission and has ordered duty increases on Swiss watches and movements up to 50 percent on the basis that imports were increasing at a rate causing injury to the United States watch industry. In the face of a constant policy of denying increases in duties on other items, this is an astounding decision, though a just one.

Why then, when a far more important and dollar-wise larger industry is in this spot (and who denies it?), should the President shilly-shally around instead of promptly approving the lead-zinc recommendations the minute they reached his desk? If there ever was a clear-cut case of imports "causing injury" to a United States industry the lead-zinc case is it. Something strange hides in the wood pile!

• Bureau of Mines Reorganization Ordered

The decision of Interior Secretary McKay to reduce the number of Bureau of Mines Regional Offices from nine to four seems like a wise one. The Boyd reorganization, which decentralized the bureau into nine regions, did little to increase efficiency. In fact, in many ways, it merely delayed transmission of reports to Washington. Cutting down the number of regional offices should at least save money as only four instead of nine will be competing with Washington in importance. Whether it will make for more efficient operation remains to be seen. Decentralization, which often looks so good on paper, does not always have the

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benefits it theoretically should have. Sometimes it makes a once compact organization merely unwieldy.

● Lead-Zinc Unemployment Continues To Grow

With the closing of the Tooele plant (Utah) of the International Smelting and Refining Company some 500 men joined the ranks of the unemployed due to the low lead-zinc prices. Where is all the government support which was promised the mining industry's "distressed" areas by the White House policy statement of March 26, 1954?

● Exploration Allowance Is Boosted

Under the past tax law a taxpayer might deduct in the current taxable year up to \$75,000 of mine exploration as expense, or might elect to defer these expenses and deduct them proportionately as the minerals were sold. Under the new bill the limit is raised to \$100,000, which still is too low, but a trend in the right direction.

● Stockpile Objectives Are Variable

The Office of Defense Mobilization issued a second authorization for the General Services Administration to buy some lead and zinc for the stockpile—at the market price. The amount to be purchased was not revealed. It is understood that this offer to purchase, as well as the previous one, was not part of the new "long-term" stockpile program. Purchases for the short-term program seem rather strange, since early this year ODM indicated that it had sufficient metal in stock and under contract to satisfy the short-term objectives. However, as one high government official phrased it privately, "these stockpile objectives are remarkably elastic" and seem to depend a great deal upon economic and political expediency, although ODM would never admit this to be the case.

● Multiple Mineral Development Authorized

Congress has enacted the multiple mineral development bill, S. 3344, to clarify the title situation for mining claims on lands held under oil and gas leases. The act amends the mining laws, the mineral leasing laws, and the Atomic Energy Act to permit multiple development of minerals in the same tracts of public lands and protects all rights of valid existing mining claims. It also provides that claims validated under the act and claims hereafter located, upon issuance of patent, shall receive full title to all minerals including leasing act minerals unless land is then subject to lease, lease application, or known to be valuable for leasing act minerals.

COMING CONVENTIONS

September 20 to 24th, 1954. Western Division AMERICAN MINING CONGRESS Exposition, San Francisco, California.

September 24, 1954. Fall meeting MINERALS BENEFICIATION DIVISION AIME, Fairmont Hotel, San Francisco, California.

October 5 through 9, 1954. Annual fall meeting INDUSTRIAL MINERALS DIVISION AIME, Lake Placid, New York.

October 14, 15, 16, 1954. NEW MEXICO MINING ASSOCIATION and SOUTHWESTERN INTERNATIONAL MINING ASSOCIATION joint meeting. Carlsbad, New Mexico.

October 18 through 22, 1954. The 42nd NATIONAL SAFETY CONGRESS AND EXPOSITION, Sessions at five hotels in Chicago, Illinois.

October 27, 28, 29, 1954. Third NATIONAL CLAY MINERALS CONFERENCE, Rice Institute, Houston, Texas.

SEPTEMBER 1954



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Jackpile mine (left) on Laguna Indian Reservation is the largest open pit uranium mine in the United States. Note diabase sill above adit (driven in ore) at lower



center. At right is the Windwhip open pit mine whose out crop was discovered by a Laguna Indian prospector in the bottom of a dry wash.

Why Anaconda's Uranium Mines Are Unique

At Jackpile open pit mine 125-feet of waste is stripped to top of ore while mining at Woodrow is underground for primary ore in breccia pipe

George O. Argall, Jr.

Editor
Mining World

Anaconda Copper Mining Company has made and is continuing to make uranium exploration and mining history at its New Mexico operations centering on the Laguna Indian Reservation.

Here are the highlights of Anaconda's successful program: 1) find areas of radioactive anomalies by low altitude airborne scintillometer prospecting; 2) make a detailed on-the-ground geologic check and map of every anomaly; 3) prospect drill every likely area indicated by geologic check and map of every anomaly; 4) keep right on drilling by one of three methods those areas where initial drilling was favorable until an ore body is delimited or the area can be written off; and 5) mine the ore body, in most cases, by open pitting, while raising the stripping ratio in comparison to that at other mines.

So successful has this program been that Anaconda has recently completed a first addition to its limestone gangue uranium mill at Bluewater, Valencia County, New Mexico, and has started construction of a new and separate unit for sandstone gangue ores with an ini-

tial capacity larger than that of the existing mill.

Ore in Two Formations

Commercial uranium mineralization in the area found to date has been in two formations: the Todilto limestone and the Morrison formation.

First publicized discoveries were made in the Todilto limestone on the south side of Haystack Butte in 1950. The Todilto is formed by an upper member, plus or minus four or five feet thick, termed the "Crinkly" because of its characteristic wavy bedding planes. It is underlain by six to 20 feet of "Platey" limestone. The limestone, being erosion resistant, caps a series of low mesas or benches dipping slightly to the north and crops out intermittently from a point northeast of Gallup to a location 30 miles southeast of Grants.

The Morrison is, of course, the host rock for most of the carnotite-

type Colorado Plateau uranium ores. The Morrison in the area has three members: Recapture Creek shale (oldest), Westwater Canyon, and Brushy Basin. The largest ore bodies in the district have been found in the Westwater at Poison Canyon north of Bluewater by the Haystack Mountain Development Company (Santa Fe Railroad subsidiary), and by Anaconda at the Jackpile, Windwhip, and North Jackpile mines, six miles north of Laguna and 40 miles east of Bluewater.

Structural control seems to have been important in the Todilto where definite elongation of ore bodies follows "rolls," small monoclinical folds, and faults. Several faults with 10- to 20-foot displacements cut the heart of the Poison Canyon deposit. Structural features at the Jackpile are being evaluated and correlated by Anaconda geologists as mining proceeds. This ore body has a unique feature not found in any other Colorado Plateau uranium deposit. It is a post-ore diabase sill or flat-lying dike which, in part, overlays and also cuts through the ore body. This sill is three to seven feet thick and has a gently rolling or undulating upper surface, in places turning sharply up or down for a few feet. In one place in the Jackpile the sill has a sandstone plug in it.

This is the second of two articles covering Anaconda's uranium operations in New Mexico. The Bluewater mill was described in the August, 1954 issue of MINING WORLD.

Early in 1951 Anaconda secured a number of leases north and east of Bluewater and started a program of geologic reconnaissance. Indications were favorable so the leasing program was stepped up and exploration was started in May of that year. Leasing was necessary, as very little of the area was open to mineral entry because the mineral rights were owned by holders of Spanish land grants, by cattle ranchers, or were on Indian Reservations and belonged to various Indian tribes. This early exploration was for mineralization in the Todilto from the top of the benches through their thin cover of overburden. Miles of trenches were excavated to the top of the limestone with back hoes, and, to a lesser extent, with bulldozers. Diamond and wagon drilling was done and test pits sunk. This resulted in the discovery and delimiting of several ore bodies. One of these was test mined to obtain possible mining costs, and to learn more about the occurrence of the ore.

Laguna Indian Reservation

During this early exploration period, prospecting was very active in the Bluewater district. Airborne exploration was started in August 1951 and soon extended to the Laguna limestone areas to the south. The discovery of uranium mineralization in the limestone on the Laguna Indian Reservation extended the area of the district.

In October 1951 Anaconda secured an exclusive prospecting permit from the Laguna Indian Tribal Council covering the 410,000-acre Laguna Reservation. Under the permit terms Anaconda has the right,

and obligation, to prospect with definite dollar expenditures stipulated. Anaconda also has the right to select certain areas for mining leases and pays a sliding scale royalty for all ores produced.

Aerial Prospecting Today

By trial and error and hundreds of thousands of miles of flying in the last three years, much has been learned about airborne radiometric prospecting. Calibration of the scintillometer is most important for every survey and it must be calibrated before each flight. This is done by flying over a man-made ore body consisting of 2,300 pounds of 0.21 percent U_3O_8 ore stacked at a section corner near the flying field. Instruments have been improved in the last three years so that today the probe of the scintillometer is carried in the plane rather than suspended below it. The probe and the recorder weigh only 30 pounds each.

Early every morning if flying weather is good (and the early hours are always best because the air is smoother, permitting lower flying), pilot Woodrow "Woody" House and William P. LeCroix, geologist-observer, take off in the Piper Super Cub. After several hours of near-surface pinon tree hopping, canyon flying, and rim rock edging, they return to the mill and check the recording log. Areas of unusual radioactivity are reported to the geological department. Chief geologist Bob Lynn and the flight crew locate the radioactive area on an aerial photograph and as soon as possible one of Anaconda's geologists is sent to make a ground check. Useful as the airborne scin-



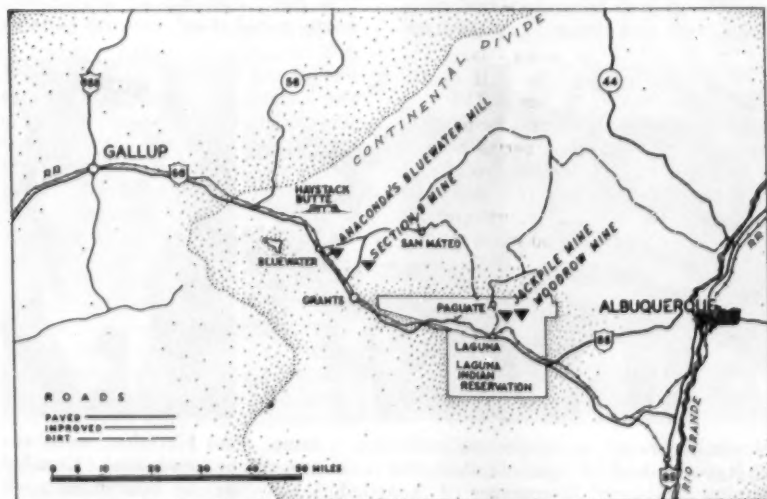
Four benches together with waste disposal roads are shown in this view of Anaconda's Jackpile mine.

tillometer is, it hasn't eliminated the field geologist. It takes close observation on the ground to check the geology and mineralization. Anaconda geologists have done plenty of checking, too. In many instances a geologist with a Geiger counter starts at the top of the Morrison formation and walks a contour line completely around the mountain or mesa—many miles if necessary. He then drops 10 feet vertically down the mesa side, walks a lower contour around the mesa, and continues the same every 10 feet to the base. Laguna Indians have proven to be very effective prospectors and the outcrop of the Windwhip mine was found by one of them prospecting on the bottom of a dry wash.

Jackpile Mine

Aerial prospecting in November 1951 along a Morrison rim over the Laguna Reservation about six miles north of Laguna and three miles southeast of Paguate indicated a radiometric anomaly. A party of geologists headed by manager Jack Knaebel checked the area on foot and found that the anomaly had been caused by uranium ore float in talus below a 200-foot-high Morrison canyon wall. Tracing the float to its source led to the discovery of two typical outcrops of Colorado Plateau-type uranium ore in the Westwater Canyon (middle Morrison) member.

The outcrops were only two to four feet thick and 20 feet long. It was possible to bulldoze several drill benches out of the mesa several tens of feet above these outcrops and a wagon drill was moved in. Holes





A major uranium discovery in the Morrison formation, the Jackpile mine is being developed into a profitable producer. In this picture waste is being loaded. Note PortaDrill on mesa at top right.

were spotted on 15-foot centers and drilled to depths averaging between 55 and 60 feet. About 6,000 feet of hole were drilled with only fair success. The ore body appeared to be narrow and to have a northerly trend into the mesa at a very slight angle.

A Major Discovery

As the ore was traced into the mesa it became necessary to start diamond drilling because the depth of cover increased rapidly. Diamond drills were moved to the mesa top and drilling continued. Suddenly the drilling showed that the ore body had turned eastward and was widening out. The drilling program was speeded up and the E. J. Longyear Company, drilling contractor, placed more drills in operation bringing the total to five. Holes were spaced on 50-foot centers, cores were taken, and a total of 39,700

feet of diamond drilling was completed. Average hole depth was 175 feet. Holes were drilled through 20 feet of Dakota sandstone capping, an average of 140 feet of Westwater, and were bottomed in the Recapture Creek shale. Anaconda later operated its own PortaDrills to check diamond drill results, which it did closely. This drilling completely delimited a major ore body of substantial thickness and lateral dimensions. This drill exploration indicated a major discovery—a major discovery in comparison with any uranium ore body on the Colorado Plateau. Ore is typically cross bedded with numerous silicified and uranified logs.

Anaconda engineers made immediate plans to check the drilling by underground exploration. Three adits were driven into the mesa. No. 1 was driven in ore. From it two raises on drill holes and two cross cuts were also driven. Total footage

was 358 feet. All material excavated was shipped to the Bluewater ore purchasing depot in test sample lots. No. 2 adit was driven below the ore body, in part to prospect uranium mineralization found on the sandstone-shale contact but primarily to permit checking drill holes with raises. Total length of this work, including four cross cuts, was 714 feet. The No. 3 adit, the most northerly, was driven on the same contact underneath the ore and from it three raises were driven. All ore excavated from the raises was shipped in test sample lots. Altogether, five 8- by 12-foot raises were driven into the ore body and four completely through it. The large samples mined during this period confirmed the grade and thickness of the ore as had been originally determined by drilling.

The adits were 10 by 10 feet in cross section. All broken muck was picked up with a Caterpillar D4 front end loader which then backed out and dumped its load into either the ore bin or over the dump. To increase ventilation in the No. 3 adit and to obtain an additional sample of the ore, a 36-inch-diameter Calyx drill hole was drilled 174 feet from the top of the mesa to intersect the adit about 1,000 feet from its portal.

Anaconda had now proven a major ore body, the grade was good, and the ore was amenable to carnotite-type milling methods used for similar ores in Colorado and Utah.

Why Open Pit

Immediate plans were made for mining. Both underground and open pitting methods were considered. Knowing the tonnage, grade, altitude, and depth of the ore body, nature of the ore and inclosing rock, how mine openings in the ore and waste would stand, and the variable



Left to right are William P. Lecroix, geologist observer; Woodrow House, Anaconda's chief pilot; Ray Coudray and Alton Head who are geologist and mine foreman

respectively, Section 9 mine. John Herndon, mine superintendent for uranium mines; and Jack Knaebel manager of Anaconda's New Mexico operations.

position of the diabase sill in relation to the ore, the mining method to be used was determined.

An open pit was selected as the way to mine the Jackpile. Major reasons for this selection were:

1. Maximum extraction (no pillars) by open pitting.
2. No ground support would be needed.
3. Easier to see and follow ore.
4. Outlying tongues of ore (between exploration holes) could be seen and mined, if necessary, by adits in pit walls.
5. No underground mining program would be necessary to train Laguna Indians who, while willing and loyal workers, have no mining experience and must be preferentially employed under the terms of the prospecting and mining agreement.
6. More of the ore body and enclosing sandstone would be exposed so as to facilitate interpretation of a broader geologic outlook.
7. Safer mining would result.
8. More selective mining would be possible around the sill.
9. Favorable waste dump sites were available in the canyon to southwest permitting short level hauls.
10. All these contributed to a lower cost which, of course, was of greatest importance.

It should be noted, of course, that the ore could not be mined as cleanly with mechanical equipment.

Contract Stripping

Since the size of the job scarcely justified purchase of large stripping equipment, Anaconda called for bids from a selected group of contractors to remove about 90 percent of the overburden, and in September 1953 awarded the stripping contract to the Isbell Construction Company of Reno, Nevada. Isbell moved in equipment and has since been at work on a two-shift basis, using the following: one (more recently, two) 3-yard No. 54B Bucyrus-Erie Diesel shovel; six No. 221W Euclid Diesel end dump trucks; one PortaDrill (blast hold drilling); one churn drill; one D8 Caterpillar bulldozer; one No. 12 Caterpillar road scraper; and necessary shop and maintenance equipment.

Isbell has established three main benches in the pit and has built



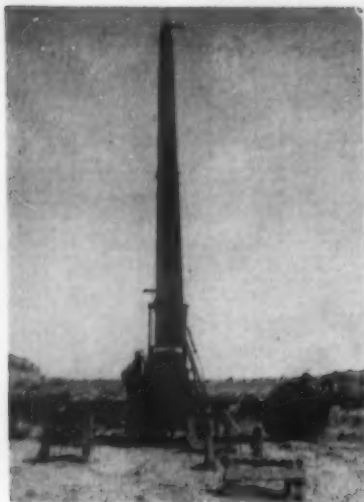
Ore occurrences are spotty and selective mining must be practiced at Anaconda's Section 9 mines in the Todilto limestone. In this picture miners are drilling a small face preparatory to blasting.



This is a typical "ore roll" in the Todilto limestone. Structural control in the country rock appears to be important, with mineralization, in many instances, having an elongate form along rolls.



Loading ore from the Woodrow stockpile with a TractoShovel. Ore is trucked 52 miles to Anaconda's mill at Bluewater, New Mexico. Rail shipment will be utilized on completion of a spur at the mill.



Two types of drills are used to explore the Woodrow mine area. At left is a diamond drill operated under contract by E. J. Longyear Company. The PortaDrill at right uses a two man Indian crew and engineer's helper.

level haul roads leading from each bench to the canyon southwest of the pit. These benches from the mesa top are 45 to 50 feet, 25 feet, and 25 feet high, respectively. Waste from the top bench is hauled the greatest distance around the canyon wall—that from the lowermost bench, the shortest distance. This prevents waste from the highest dump from falling on the road to the lower dump.

Below the three main benches is a fourth (and sometimes a fifth) waste bench which varies from 5 to 25 feet in height to the top of the orebody. These are carried by Anaconda on company account. In those places where the sill overlays the ore the diabase is mined in this bench.

With the exception of the top 10 to 20 feet of the highest bench which is the Dakota sandstone, all the rest of the stripping is in the Morrison formation. This consists of thick bedded, cleanly washed white sandstone with thin interbedded shale. This formation drills easily, can be broken with low powder consumption, and, other than its to-be-expected abrasiveness, has presented no mining problems. However, the tougher Dakota breaks in big blocks, making a secondary blasting problem.

Blast hole drilling is done by a PortaDrill (and also, more recently, with a churn drill) with holes bottomed five feet below the grade line of the next lower bench. During each shift 350 to 400 feet of hole are

drilled. Holes are detonated in rows with timing by millisecond delays.

Ore Mined by Anaconda

Anaconda does its own mining and the lower part of the stripping. This permits more careful and clean mining of the flat laying, variably thick, ore. It also permits Anaconda to correlate shipments independent of stripping.

When the open pit program was started, Anaconda built a mine office, a combination compressor-warehouse-garage, and a change house north of the present pit. Compressed air for the early underground drilling and now for drilling the holes in ore is furnished by a 365-cubic-foot Gardner-Denver compressor driven by a Caterpillar D 8800 Diesel engine. Air is piped to the open pit and used in jack hammers and wagon drills. Electricity for lighting, for power tools, and for operation of the radio station is generated by an 87.5-kva Electric Machinery generator driven by a Murphy Diesel engine.

For ore loading, separation of diabase from the ore, and removal of the last several feet of sandstone overlaying the ore, Anaconda uses a 1½-yard, 38 Bucyrus-Erie Diesel shovel and an Allis-Chalmers HD9G loader. Ore trucks can either be loaded directly in the pit or from a 100-ton bin originally built to hold ore mined through development adits. Anaconda uses three Model 60-2A Koehring Dumpsters to haul ore to the bin, and diabase to a separate waste dump.

This equipment is used for waste stripping when not used for ore mining.

"Ring Fault" at Woodrow Mine

About 7,000 feet southeast of the Jackpile and near the bottom of a wide canyon is the Woodrow mine. Without a doubt, this is one of the most unusual occurrences of uranium found to date on the Colorado Plateau. Anaconda, true to its tradition of detailed geologic mapping and study of mineral genesis, is mapping and studying the Woodrow in careful detail.

Structurally the Woodrow is a "ring fault" or "breccia pipe" almost circular in cross section with a diameter of 30 feet. It is cone shaped, increasing in diameter with depth, dipping about 75° southeast. Vertical slickensides show that the center of the ring dropped, apparently about 15 feet.

Mineralogically the Woodrow is a high-grade primary uranium deposit, identified at Anaconda's Butte laboratory as a group of oxide and silicate minerals intimately associated with asphaltic matter, including uraninite and coffinite. Iron sulphides are also present. The primary minerals oxidize to a typical uranium yellow after exposure to air for less than a week.

Host rock is variously shale, sandstone, and limey sandstone of the Morrison formation.

Age must be very recent. Despite the intensive faulting and crushing and water circulation (evidenced by water found in underground workings), no secondary minerals have been found as mine openings have been developed; in fact, secondary minerals extended only a few feet below the outcrop.

The outcrop was discovered during an airborne radiometric survey with the mine subsequently named for Woodrow House, Anaconda's chief pilot.

Why and how the center of the ring or pipe dropped has been and is the subject of much discussion and conjecture by all who have seen the mine.

How Woodrow Was Developed

Woodrow development has been through two shafts to a depth of 100 feet. The shafts were "drilled" rather than sunk. Two 36-inch-diameter Calyx holes 88 feet apart were drilled to a depth of about 100 feet. The No. 1 hole was spotted on the surface so that it would pierce the core of the "ring fault." The No. 2 hole is south of the ring. After the

No. 2 hole had been completed, a miner was lowered to the bottom with a chipping hammer which he used to start a drift toward the other hole. Using the hammer the hole bottom was enlarged to full drift size and normal drifting on a two-shift-per-day basis soon connected the holes. Next, a two-compartment raise was driven around the No. 1 hole to surface and timbered with square sets. This is now the manway and service opening while the No. 2 hole serves as an escape and ore-hoisting shaft. To lower development costs, a simple tripod is used as a headframe over each hole.

In certain sections of rock, walls of the hole crumbled on exposure to air. To minimize sloughing a layer of concrete 2 inches thick was built up around the wall. Spikes were driven into the rock before concrete was applied to hold the concrete to the rock.

Both shafts are equipped with Vulcan-Denver hoists, No. 2 with a 25-horsepower electric motor and No. 1 with a gasoline engine. Power is brought to the mine over a transmission line from the Jackpile generator.

The fault zone is extremely heavy, so square set timbering is necessary in stoping. Waste from the surface is chuted through the manway compartment of the shaft for use as stope fill.

Ore is hoisted to the surface and trammed to a stockpile dump. When the dump is full, ore is picked up with an Allis-Chalmers HD-9 TractoShovel and loaded into trucks for transportation to the Bluewater receiving station.

Will Woodrow be Key?

No one knows what the study of the Woodrow ore body will lead to. When all the facts are known it could well be the key to new theories of ore genesis and deposition. This is one geologist's mine that really pays for itself, because as geologic study goes on high-grade ore continues to be mined. However, mining costs are high, due to heavy ground and very small rate of output.

Limestone Mines

Several open-pit mines in the Todilto limestone are operated in Section 9, northeast of Bluewater. This is the area where first exploration and mining was carried out. Ore occurrences are spotty and selective mining is practiced. Fortunately there is only a thin covering (5 to 20 feet) of blowsand and/or barren limestone. Waste and ore are care-

fully drilled, shot in small blasts, and loaded into trucks right in the pit by a Caterpillar D4 with Trackson front end loader. Waste is trucked to dumps and ore to stockpiles or directly to the Bluewater purchase depot.

A. J. Fitch is general superintendent; R. D. Lynn is chief geologist; J. P. Herndon, mine superintendent; J. M. Fitch is master mechanic; B. F. Barlow, foreman, Jackpile mine; A. H. Head, foreman, Section 9 mines; Stearns Cook, Laguna mines geologist; Floyd Ballantine, Jackpile mine engineer; Barton Cross, assistant Laguna geologist.

Drilling Studies

Sampling and tonnage estimations of uranium deposits are most difficult, even when a large number of drill hole results are available. As a double check Anaconda uses both diamond drilling and rotary drilling. Each has its advantage, and information obtained by each type supplements the other.

The rotary drilling (PortaDrill) has the advantage of not requiring water which can mean lower costs in the desert region; also a larger sample can be obtained, and in most of the formations in the district more feet of hole can be drilled per shift. The diamond drill has the advantage of obtaining a core; it can drill wet clay or water-bearing formations, and drill to greater depths.

When Anaconda operated its coal mine on Mount Taylor a Cardox-Hardscog coal auger with a 30-inch-diameter cutting head was used along the outcrop. Purely as an ex-

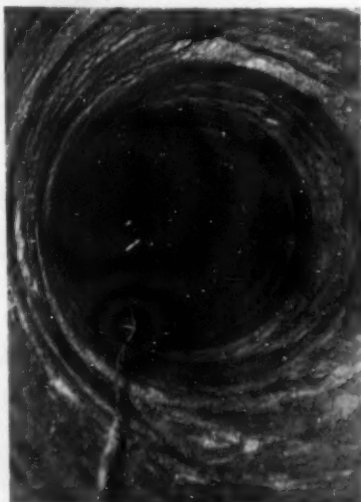
periment, and possibly as a cheaper method of driving shallow tunnels into uranium ore cropping out along canyon rims, this auger was brought to a prospect between the Jackpile and Windwhip mines. Four holes, two rows of two holes, one row above the other, were drilled horizontally into the rock face forming a "tunnel" about 65 feet long. The sandstone proved to be too tough, but with proper adaptation of equipment such entries could be drilled economically. Wear on the cutters used was rather excessive, and it proved difficult to keep the holes parallel, but the job was done in about 12 hours of actual drilling time. The plan had been to break out the central astroid-shaped (hypocycloid with four cusps) core between the four holes to form a mine opening. No further work was done along these lines, for other and unrelated reasons.

Future Operation

Anaconda's exploration is continuing and will be continued. Airborne prospecting has not been slowed, but exploration drilling has been cut to two diamond and two PortaDrills.

The immediate goal is mine production. The Jackpile stripping has progressed to the point where a regular output of ore can be maintained. Stopping at the Woodrow is combined with mining and geologic studies to yield a regular but small output.

Anaconda has become an important company in the uranium raw materials field in a few short years. It will continue to make uranium exploration and mining history.



Here is what a Calyx drill hole looks like from the bottom (left). This is the Woodrow ore-hoisting shaft. At right is a portion of the ring fault structure. Note circular arc of footwall at left with darker ore at right center.



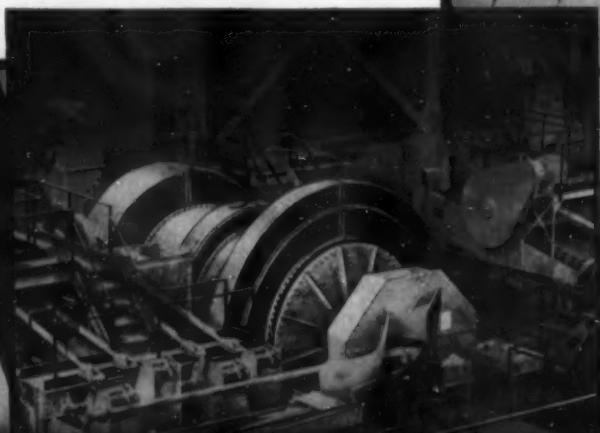
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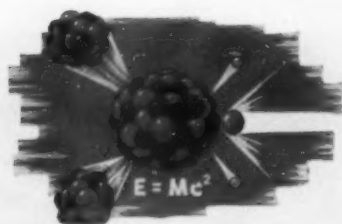
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FISSION FACTS

Monthly Roundup of Mining News
In the Atomic Energy Field

Australian U₃O₈ Plant Opens in Rum Jungle Area

Australia's first uranium processing plant in Rum Jungle, Northern Territory will be officially opened September 17. The plant is expected to produce uranium oxide for the United States and Great Britain under terms of a 10-year contract which calls for assistance from the two countries in developing and mining deposits in the area.

The Rum Jungle region, a 175-mile strip in the Northern Territory, experienced a surge of activity earlier this year, with most Australian uranium investments concentrated there. Agent for the Australian government in the Rum Jungle uranium field is Territory Enterprises Pty. Ltd., a new subsidiary of the Zinc Corporation.

With the participation of Mount Isa Mines in Queensland and several other mining companies in New South Wales and Victoria, there has been a noticeable widening of the uranium search area. In the Port Lincoln district at the tip of Eyre Peninsula, South Australia, three uranium deposits have been reported. Discoveries were made by P. J. Gibson, district supervisor for the Electricity Trust. Two deposits are in the township of Port Lincoln and the third is three miles away. Samples have been taken to Adelaide, capital of South Australia, for analysis by the Department of Mines.

Canadian Refinery to Get Gunnar Uranium Shipments

Gunnar Gold Mines, Ltd., Saskatchewan, Canada, has signed a contract with the government-operated Eldorado Mining and Refining Company for \$76,950,000 in uranium concentrates. The ore will be delivered from Gunnar's Lake Athabasca (Saskatchewan) property. Tonnage and grade of the Lake Athabasca deposit have not been revealed for security reasons, but estimates place the gross value of the orebody at more than \$125,000,000.

It is believed that the contract with Gunnar was a definite factor in the Canadian government's recent decision to expand facilities at Eldorado's refinery in Port Hope, Ontario (See MINING WORLD, August 1954, page 60) to enable Canada to completely process its own uranium ore. Present facilities limit the plant to converting the ore to uranium oxide, at which point it has been shipped to the United States for additional processing.

The Gunnar deposit was discovered in late 1952, and drilling has been conducted on the property since that time.

Oil Companies Testing Shot Holes for Uranium

An increasing number of oil and gas companies have been keeping their eyes open (in many cases secretly) for radioactive minerals in their normal prospecting operations.

Areas of greatest interest for the companies have been in the Uinta Basin in eastern Utah, Powder River and Big Horn Basins in central Wyoming, the Washakie and Green River Basins in western Wyoming, the Little Colorado River drainage area in Arizona, and the Mojave and Colorado Deserts in southern California and western Arizona.

At first the companies used Geiger counters for surface prospecting but more recently they have been probing and logging seismic shot-holes. At least seven companies have been probing these holes in the Four Corners area of Colorado, Utah, Arizona, and New Mexico. Radioactivity reportedly has been found in 20 holes in the area. Eight oil companies are probing in the north Utah-Wyoming area, while still others are doing the same in Montana, Wyoming, South Dakota, southern California, and western Arizona. Discoveries have been made in the Mojave Desert region of the latter two states.

The importance of this type prospecting is apparent when it is known that more than 300,000 seismic holes were drilled in the Rocky Mountains to depths between 50 and 150 feet in 1953.

Three Centers to Provide Unclassified Information

Three national depositories of unclassified information concerning developments in the field of atomic energy have been announced by the United States Atomic Energy Commission. They are the Stanford Research Institute, Stanford, California; the Atomic Industrial Forum, New York City; and the John Crerar Library, Chicago, Illinois.

The depositories will maintain and provide library, reference, photocopy and literature-search services for the public. New AEC unclassified reports of special interest to industry and reproducible of engineering drawings will be supplied as they become available.

Sidelights from Moab

MOAB, UTAH continues to be the mining boom capital of the nation, and the Mecca for companies and individuals from Canada to Honduras, and on to Bolivia—all looking for uranium.

THE BOOM HAS STABILITY, too, when the country's largest gold mine operator (Homestake Mining Company), largest ilmenite producer (National Lead Company), and largest uranium mine operator (Utex Exploration Company) all have offices within a few blocks of each other.

THE CLAIM-STAKING RUSH, which began a year ago and reached its peak six months ago, has slowed down because of the scarcity of unclaimed open ground. Also the AEC's Circular No. 7 has meant that prospectors are doing a more accurate job of staking.

NEW BUILDINGS are being built overnight. As one workman said, "Don't you know the place? That was a cornfield yesterday." Construction crews from as far away as Chicago, Los Angeles, and Cleveland are busy building hotels, motels, business stores, and a new 95-house subdivision.

BRANCH OFFICES have been opened by large stock brokers from Calgary, Alberta, Canada and Dallas, Texas.

PLANES FLY OVERHEAD from early morning 'til late at night taking prospectors and mine operators to their remote properties, and flying airborne exploration parties to all parts of southern Utah.

HUNDREDS OF ORE TRUCKS continue to roar through the streets at all hours of the day. Most of the ore is destined for the new AEC ore-buying

depot just north of Moab. Other trucks haul south to the AEC mill at Monticello, Utah, while still others haul ore as far as Grand Junction, Colorado to the Climax Uranium Company mill.

MINE ROADS are dry and dusty as ever, but the prospectors, mine operators, and promoters, using air-conditioned Cadillacs this year to reach their properties, beat the hot weather. CASUAL INSPECTION of nearly every car, station wagon, jeep, and truck passing through Moab discloses large rolls of claim maps and claim location certificates. It is not too unusual to see two prospectors talking on the street and one will draw a map of his claim in the dust on the hood of his car.

SLEEPING ACCOMMODATIONS have more than doubled in the last year, but it is still not unusual for many people to drive at least 75 miles to find a bed to sleep in.

NOTABLE INFLUX of oil companies and their personnel continues. In fact, one oil company scout and lease broker reports that he has been commissioned by a number of firms to get some uranium production. His associates feel that oil has reached its peak use, that the market for bunker fuel, Diesel fuel, oil-fired power plants, etc. will be supplemented by uranium fuel for atomic power plants. It is noteworthy that the first step many oil companies take in getting into the uranium business is to hire experienced and trained AEC personnel.

THE MOAB DISTRICT today may be described as moving into its second stage of exploration and mine development.

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NEW 4,000 TON copper flotation mill use much equipment from the Masbate Consolidated gold mill. New flotation machines will be manufactured in Japan.

Machine shop at right (almost completed as of June 27) is at end of ball mill bay so that one overhead crane will service both.



TURBINE CONDENSER for the steam electric power plant is shown above. The plant is located over a 400-foot-deep coal seam which will furnish part of the plant's fuel requirements. The loading wharf (below) is built of 500 feet of rock causeway and 500 feet of pier supported by wooden piling. Because of the shallow sea, overall length of the wharf's belt conveyor will be 1,600 feet.

Atlas Building

By **George T. Scholey**

Chief Mining Engineer

A. Soriano y Cia

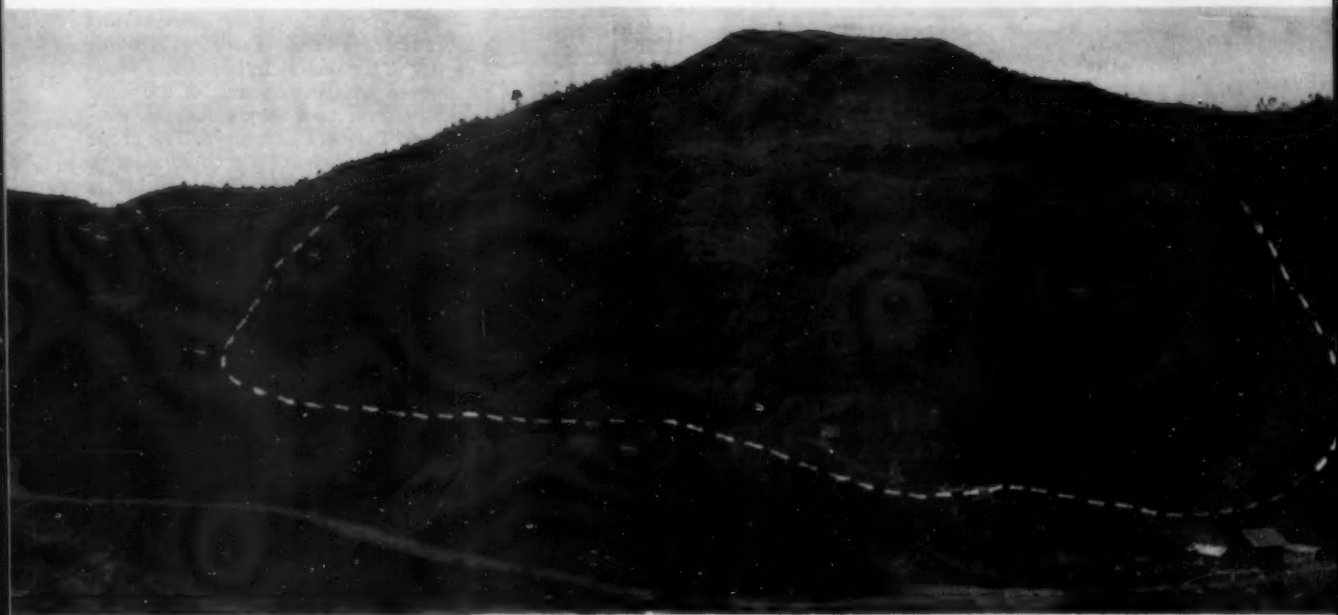
Manila, Philippine Islands

A group of engineers will soon bring into production the largest copper mine in the Far East. This is the Toledo mine of the Atlas Consolidated Mining and Development Corporation and is located on the Island of Cebu in the Philippines. Atlas is a consolidation of three well known Philippine gold mining companies and is headed by Col. Andres Soriano.

Post World War II conditions did not make the re-opening of some of the gold mines favorable so the three companies: Masbate Consolidated Mining and Development Corporation, I.X.L. Mining Company, and Antamok Goldfields Mining Company merged into one company and focused their attention on base metal mining. Masbate's 4,000-daily-ton mill was one of the very few which survived the war almost intact so a search was carried on for a property at which this equipment could be used.

Toledo Looks Promising

Of the many properties examined the Toledo mine appeared to have the most merit. The Toledo area had been known as a copper region for many years and during the war a Japanese firm erected a modern flotation mill of 100 tons daily capacity. The firm opened five levels and exposed an ore body approximately 300 feet in length, 120 feet in width, 100 feet in depth, averaging 2.30 percent copper. Shortly after the mill was placed in operation it was destroyed by the Guerrilla forces. Mindanao Mother Lode obtained and re-opened the property in 1951; in 1952 an option was given to A.



TOLEDO OREBODY is outlined in white. The high mountain in background, outside of ore body, is diorite but averages 0.35 percent copper. Note the start of

stripping at upper right which shows as a series of horizontal benches. The foundations for the old Japanese mill are barely visible inside lower limits of ore body.

Orient's Largest Copper Mill

Soriano y Cia, to explore the deposit. This option was later ceded to Atlas by A. Soriano y Cia. with A. Soriano y Cia. acting as managers and consultants.

Ore Reserves Increasing

Soriano Engineers recognized the deposit to be massive in nature and laid out a development program to delineate the limits of the mineral zone. This program, has consisted, to date, of 13,000 feet of diamond drill-

ing and 2,000 feet of drifting, cross cutting, and raising. The ore body has been blocked over a length of 1,200 feet, width of 700 feet, and depth of 500 feet with the bottom and end limits still undetermined. Ore reserves now stand at 20,000,000 tons averaging 1.13 percent copper, 0.015 ounce gold per ton, plus a small amount of molybdenite. The exploration work is being carried forward and the reserve figures steadily increasing.

This ore has been developed in a dioritic porphyry stock where it is in contact with and in some places intruding an overlying Pandan Series made up of thermally metamorphosed clastic sediments and basic volcanic flows. Chalcopyrite is the copper ore mineral.

Favorable Aspects For Success

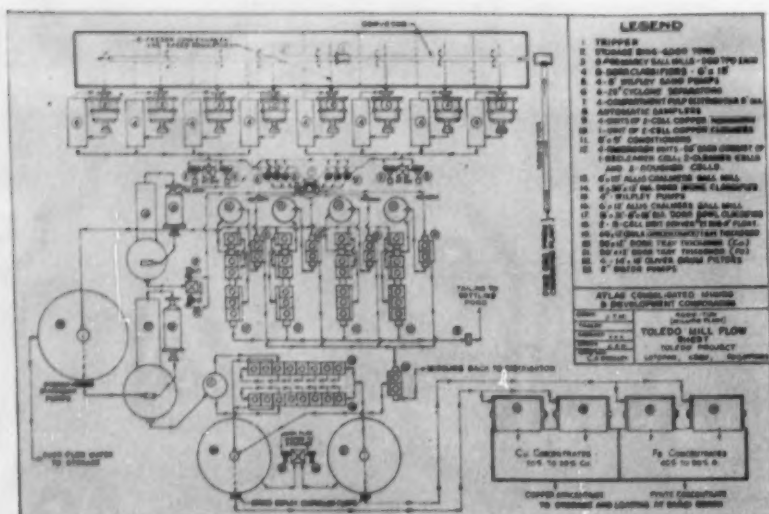
This is the largest metal mining operation undertaken in the Orient since the war and is being watched



HEAVY EQUIPMENT area (left) shows 22-ton Euclid trucks lined up for duty. The maximum ore haul for these trucks will be 1,500 feet. The helicopter at right



speeds surveys by company engineers and is also used by prospecting parties. Here a group of people meet its arrival.



with great interest by other mining companies in the Far East. A number of fortunate circumstances associated with the opening of the mine contribute to a very optimistic outlook. They are as follows: The property is located only 16 kilometers from ocean ports. The deposit is massive and most of the ore can be mined by open pit. Metallurgy offers no great problems in that the ore is soft and friable and contains predominately pyrite and chalcopyrite. Some gold will be recovered which will defray part of the costs and around 250 tons of pyrite will be produced daily as a byproduct for which a market is available. There are a number of coal mines in the immediate vicinity of the property and electric power can be generated by steam at a low cost. Annual pro-

A Sound Organization . . .



Col. Andres Soriano, (left) Atlas president and Soriano Enterprises head, is rebuilding his pre-war mining organization with the Atlas project as a base. Col. Charles M. Smith, (center) manager of Soriano mining department, realized the possibilities of the Toledo



deposit from his experience at large Arizona copper mines. George T. Scholey, (right) chief mining engineer and head of Soriano exploration department, recognized the type of deposit at Toledo and recommended it to the company.



Clarence A. Weekley, (left) chief metallurgist, has spent most of his life operating and erecting mills in all parts of the world. Manuel M. Aycardo, Jr., (center) mining engineer, handles technical problems and maintains liaison with the Philippine government and its



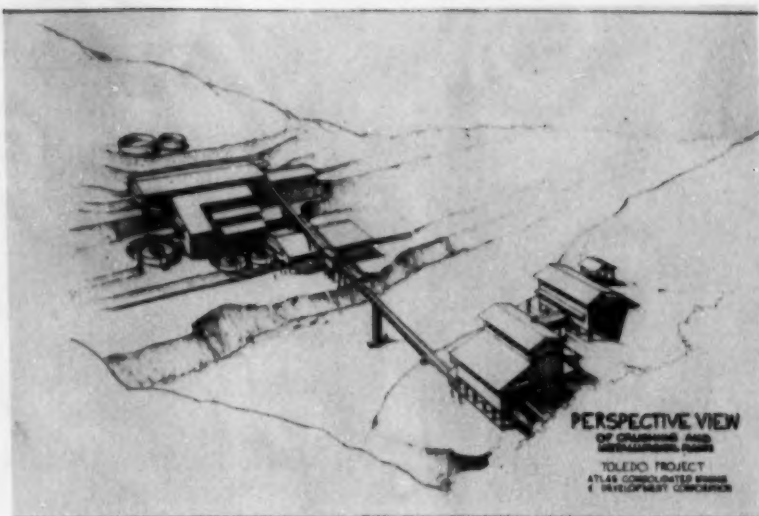
agencies and bureaus. Dan E. Lewis, (right) chief geologist, has supervised all geologic mapping. He decided that a geophysical survey would be a good thing and ran a self-potential survey which located another ore body.



duction will be approximately 30,-000,000 pounds of copper in the form of concentrate. Plans call for the eventual erection of a plant for the production of electrolytic copper in the Philippines but at first the concentrates will be shipped to Japan for treatment.

Training Philippine Staff

The operation will incorporate as much mechanization as possible and every effort will be made to eliminate the old "mano-mano" system of work in which a man was given a shovel and told to get busy. The operating staff consists of men who have had many years experience in mining operations of this type and every effort is being made to train Filipino engineers so that they can eventually take over the operation.



... Needs Experienced Men



Harvey Weidman, (left) mine superintendent, was Masbate mine superintendent before the war. He recently returned to the Philippines from Wisconsin. Henry G. Schuring, (center) mill superintendent, was also Masbate mill superintendent before the war and returned



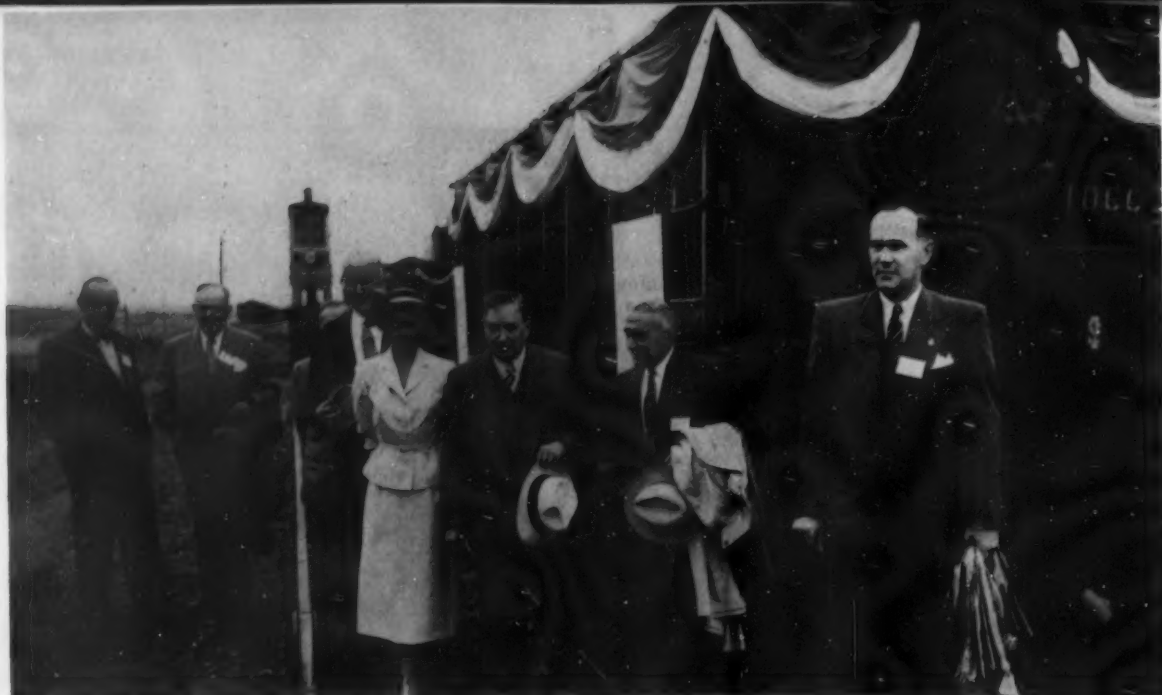
to the Islands from La Luz, Nicaragua. George A. Mackay, (right) master mechanic, has the important job of keeping all heavy equipment in operation at all times despite distance from spare part supplies. He also returned to the Philippines from La Luz, Nicaragua.



Amado Arrieta, (left) personnel manager; all the labor and employment headaches are his, but he has no trouble carrying the load. Inocencio Hidalgo, (center) construction superintendent, is considered one of the foremost mill construction men in the Philippines. He



has worked on Itogen and Lepanto mill erection. E. J. Johns, (right) chief accountant, first came to the Philippines in 1919 for the Syndicate Mining Company which later became Masbate Consolidated Mining Company.



FIRST QUEBEC CAR of iron ore is inspected at Sept-Iles on July 31, 1954 by Joseph Smallwood (far left), Premier of Newfoundland; Gagnon Onesime, Quebec Finance Minister; Joseph Thompson, presi-

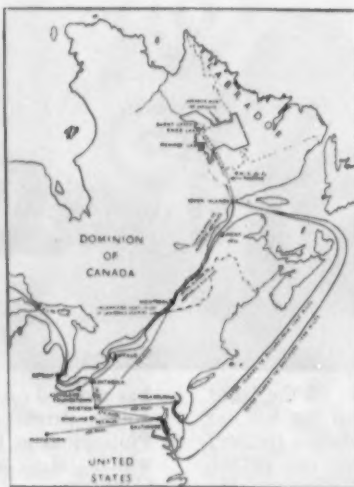
dent of Iron Ore Company of Canada and M. A. Hanna Company; Mrs. R. Layden; Maurice Duplessis, Premier of Quebec; Gerald Martineau, Legislative Counsel of Quebec; and Mayor R. Layden of Sept-Iles.

First Quebec-Labrador Iron Ore In '54 Fitting Climax To \$250,000,000 Project

Two switches snapped, two ore cars turned in the dumper, conveyor belts rolled, flash bulbs popped, the crowd cheered and ore poured into the hold of a ship to officially open the fabulous iron mines of Labrador and Quebec. On July 31, 1954, Iron Ore Company of Canada, with appropriate ceremonies at Sept-Iles (Seven Islands), Quebec, Canada, loaded the *S. S. Hawaiian* with 20,000 long tons of ore for the 1,300-miles trip down the St. Lawrence and along the Atlantic Coast to Philadelphia, Pennsylvania. This shipment leads the way for an eventual 10,000,000 tons of annual production, much of which will find its way into the blast furnaces of the United States.

Officials of two countries, including United States Secretary of the Treasury George Humphreys, Quebec Premier Maurice Duplessis, and Newfoundland Premier Joseph Smallwood, flew into town for the event. The project was blessed by His Excellency Msgr. N. A. Labrie, Roman Catholic bishop of the Gulf of St. Lawrence.

This shipment by the Iron Ore Company of Canada was the fruition of 12 years of dreaming, four years of almost unbelievable construction effort, and the expenditure of \$250,000,000 to reach the goal of "Ore in '54."



It is in every sense a hands-across-the-border venture. It was in 1942 that Jules R. Timmins, president of Hollinger Gold Mines, Ltd., sat across the table from then president of M. A. Hanna Company, George Humphreys to unfold his dream of obtaining high-grade iron ore from deposits as vast as those of The Minnesota Mesabi that lay buried beneath the lichens near Ungava Bay in the barren northeastern extremes of Canada. Hard-headed business man Humphrey, no man of small vision himself, could see that rich red ore replacing declining United States reserves as well as supplying much of the needs of the Dominion as well. They set out together to sell the project to steel companies in the United States.

Hollinger and Hanna, plus five steel producers in the United States including: Youngstown, Armco, Republic, National and Wheeling, raised \$100,000,000. Nineteen insurance companies, four Canadian and 15 American, put up the balance of \$150,000,000. Every cent was private money.

Exploration has blocked out a series of deposits totalling 417,000,000 tons of ore that will average just under 60 percent iron. Now, according to Joseph Thompson, President of IOCC and Hanna, the problem is to find unmineralized areas. The company holds exploratory and development rights on some 20,000 square miles of territory, a large portion of which must be returned to the government. It is desirable to be sure that no exceptional deposits are included in land being released.

Present production is from pits along the Quebec-Labrador border near Knob Lake where the new town of Schefferville is under construction. Mining is pretty much standard for open-pit iron deposits. Churn drills put down blast holes, big shovels load into big trucks, and the material is hauled to the rail head.

It is the tremendous construction project in a vast barren country that didn't support even an Indian, that taxed the enterprise of men, and that thrills all who see the result. Backbone of early activity was a 17-plane airlift running up to 96 daily flights (some regular schedules were maintained) into the wilderness. Materials for townsites and construction camps were ferried by air from Seven Islands on the railroad at Mont Joli. Tractors and bulldozers were airlifted to build landing strips, and heavier construction machinery was flown to the strips to continue work.

The Quebec Northshore and Labrador Railway may be unique. At



SEPT-ILES STOCKPILE AREA will hold over 4,000,000 long tons of iron ore. Railroad car dumper house and storage tracks are on right. Ore will be drawn from stockpile after winter closes mining in the far north.

least it has several unique features about it. Prior to construction, Seven Islands at the railroad's southern terminus could be reached only by water or air. Schefferville at its northern end has no means of access other than the railroad and air. Between them is nothing except construction and maintenance sites for the operation.

Railroad construction leapfrogged north from Seven Islands. Construction crews kept building ahead from the end of the steel.

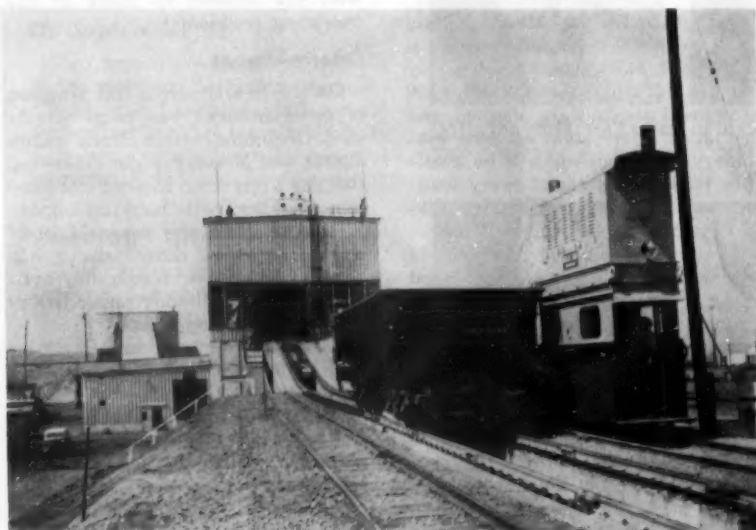
Railroad equipment includes about 50 Diesel electric locomotives

of 1,500 to 1,750-horsepower, 2,000 ore cars having a capacity of 85 long tons, and nearly 700 cars of miscellaneous types. Trains of 100 to 115 cars each will make seven to nine trips daily at peak operation. Running time loaded is estimated at 15 to 16 hours. The return will require 12 to 13 hours.

At Seven Islands facilities include dockage with a 37-foot depth at low tide, along with complete conveyor belt loading facilities. The railroad holding yards have five tracks, each with capacity for 125 cars, and a big conveyor belt stacker covers enough area for stockpiling 4,000,000 tons of ore.

Officially, capacity production has been pegged at 10,000,000 tons per year, a figure to be reached in 1957. There is little question that should it become necessary or desirable, IOCC could increase that output. The plain fact seems to be that there is plenty of iron in Quebec-Labrador. Economics will govern its future development. At first, most ore will be shipped to Philadelphia and Baltimore.

Educated guessing would seem to indicate that Quebec-Labrador will not materially slow taconite and Jasper development nor the logical continuation of production from the Lake Superior district. On the other hand, increasing demand for steel in the United States and the continued industrial development of Canada would seem to promise that this is not the last development to be expected on Canada's Northeastern frontier.



85 TONS OF IRON ORE are dumped from this car by a rotary dumper in the building in background. A system of conveyors carry the ore to the stockpile. Diesel-powered Barney at right switches the car.



San Francisco Chamber of Commerce

Golden Gate Welcomes

The Mineral Industry's Greatest Show— The 1954 Metal Mining Exposition

The mining industry's big dual purpose event—the 1954 Metal Mining Show—will get underway September 20 when general chairman Donald H. McLaughlin of the American Mining Congress opens the meeting at San Francisco. From all over the nation, top industry leaders, management personnel, technical and production men, and government officials will gather to review the state of the industry while manufacturers will exhibit all that is new in machinery and equipment.

How can the industry best gird itself to meet the challenge of rising costs, lower metal prices, the switch to a buyer's market and increased competition from abroad? Part one of this two-package event will see the national mineral policies held up for inspection in the light of today's trends. For company managers, executives, and independent operators, key experts will investigate Federal stockpiling and taxation. Government outlook on the industry will be reviewed. Congressmen and senators will present their views on proposed revisions to the mining laws and federal land policy. The problems of the booming uranium field will be aired.

The program is loaded with experts in every field. Advancements

in exploration techniques, mining methods, and ore beneficiation will be discussed in a series of outstanding sessions. Production men will find solutions to many of their problems when cost cutting methods and new ideas are examined.

Manufacturers Exhibit

Part two of the Metal Mining Show will see manufacturers of equipment and those who supply services in attendance. Nearly 150 equipment displays are planned, and the latest information on new machinery developments will be available. Representatives of every leading concern will be on hand to discuss specific operating problems.

As our higher grade reserves are depleted, the industry has witnessed a trend toward working of larger, lower grade ore bodies on a big tonnage basis. Manufacturers working with operators, and in open competition with each other, have contributed a major share toward making this trend possible. Improved haulage equipment, new drills, advances in blasting, development of rugged loading units have made it possible to boost output per man shift. Advances in milling techniques and machinery, new concentrating devices, plus study and re-

search have made it possible for the millman of today to slice costs. All these factors have combined to make it possible to treat lower grade ores.

As our industry must look to the more marginal deposits to supply the nation with vital raw materials, the manufacturers are coming up with the answer to many of the operating problems.

Entertainment

On the lighter side a full program of entertainment has been scheduled. Beginning with a chuck wagon dinner on Monday night following the day's opening session, convention members will have an opportunity to relax and renew friendships. The AMC dinner dance has been scheduled for Wednesday evening, and on Thursday music lovers can take in the opera.

Friday morning the salmon derby gets underway. Boats leaving Sausalito travel through the Golden Gate to the Pacific fishing grounds. Anyone who enjoys fishing will love to tangle with the big ones which are running in September.

In the following pages MINING WORLD highlights the convention program, and presents the lineup of manufacturers and exhibitors who will be in attendance. Be sure that

you check the entire program for sessions you won't want to miss.

Management Problems

Four meetings are scheduled at which general industry problems will be discussed.

On September 20

The first meeting, an afternoon conference, will deal with labor and personnel problems, as well as public relations. The Hon. Wingate H. Lucas, congressman from Texas, will give an address on Needed—A New Look for our Labor Law. Public Relations for the Mining Industry will be reviewed in another talk. Other problems to be discussed are Employee Relations and Selection of Supervisors, and Encouraging Students to Enter Mining.

On September 21

The Public Lands Panel will meet in the morning. A distinguished group of congressmen, government officials, and industry spokesmen will gather to analyze the government land policies.

In the afternoon, stockpiling, tariff policies, and government mineral programs will be the keynotes of a third session. The Tariff Question will be taken up by O. R. Strackbein. E. H. Weaver of the Office of Defense Mobilization will talk on Mobilization Policies in Relation to Mining. The national outlook on resources will be covered by Senator George Malone's address on Minerals and Western Hemisphere Defense.

On September 22

Two separate panels will be held in the morning. Several government officials and legislators will present their view on the tax problem. In a second panel, gold, silver, and monetary policy will be discussed.

Geology and Exploration

This is a must for all those interested in mining geology. Under the chairmanship of Rodgers Peale, the remarkable strides taken in exploration methods will be reviewed.

On September 20

Modern Exploration Methods will be the subject taken up by Eldon Gilbert. Konrad Krauskopf of Stanford University will examine Geochemical Prospecting. Other papers include a description of the Exploration of the Riddle Mountain Nickel Deposit, and the Geophysical

Exploration and Development of the Pima Mine.

Underground Mining Methods

Hard rock supervisory personnel won't want to miss the two scheduled meetings on underground mining methods.

September 21

Those attending the afternoon session will hear a report on the Underground Operations at White Pine by H. B. Ewoldt, vice president of the White Pine Copper Company. H. H. Wells of the United States Smelting Refining and Mining Company will discuss how Mechanical Material Handling Cuts Costs. Ore Transport will be dissected and examined in a panel discussion on rail, conveyor, shuttlecar, and truck haulage.

September 22

Four experts will conduct a Symposium on Block Caving at the afternoon meeting of the underground mining methods group. M. K. Hannifan, Anaconda Copper Mining Company; Robert Henderson, Climax Molybdenum Company;

J. W. Still, Miami Copper Company; J. F. Buchanan, San Manuel Copper Corporation can be expected to provide a wealth of operating ideas. Also featured will be Stanley McDougall's description of Shaft-Sinking in the Coeur d'Alene. Friction-Type (Koeppel) Hoists will be discussed by Guy N. Bjorge, consultant for the Homestake Mining Company.

Open Pit Mining

Open pit miners should obtain a bagful of new ideas when they gather at their conferences.

On September 23

On Thursday morning an outstanding group of western operators get together to compare notes on New Equipment and Operating Methods in Open Pit Mines. Observers should be well versed in methods after officials from Inspiration Consolidated Copper Company, Ray Mines Division of Kennecott Copper Corporation, the Silver Bell unit of ASARCO, Bagdad Copper, Copper Cities, Yerington, and the Eagle Mountain iron mine get through discussing current techniques.



With the able assistance of men like co-chairman Worthen Bradley, and vice chairmen A. F. Knorp, and G. S. Borden (left to right) the 1954 convention should prove to be an outstanding success.



The men who bore the brunt of the preparations are (left to right) Donald H. McLaughlin, general chairman; Frank R. Milliken, program chairman; R. K. Gottshall, chairman of the manufacturers division.

American Mining Congress Program

September 20

10:00 AM	Opening Session
2:00 PM	Labor and Personnel Problems; Public Relations
2:00 PM	Geology and Exploration
2:00 PM	Round Table Conferences

September 21

10:00 AM	Public Lands Panel
10:00 AM	Nonmetallic Minerals
10:00 AM	Drilling and Blasting
2:00 PM	Stockpiling; Tariff; Government Mineral Programs
2:00 PM	Uranium Exploration and Development—Colorado Plateau
2:00 PM	Underground Mining Methods

September 22

10:00 AM	Taxation; Gold, Silver and Monetary Policy
10:00 AM	Mining and Metallurgy of Uranium
10:00 AM	Underground Mining Methods
2:00 PM	Uranium Industry and AEC Program on the Colorado Plateau
2:00 PM	Milling and Metallurgy
2:00 PM	Special Sessions
	Symposium on Drill Steel
	Safety Conference
	Tax Conference—Cement Producers

September 23

10:00 AM	Outlook for the Mineral Industries
10:00 AM	Open Pit Mining
2:00 PM	New Developments in Uranium—North America
2:00 PM	Milling and Metallurgy
2:00 PM	Open Pit Mining

September 24

10:00 AM-4:30 PM	Tax Forum
10:00 AM-4:30 PM	Fall meeting of the Minerals Beneficiation Division, AIME will include morning and afternoon sessions.

At the afternoon meeting, Lewis A. Parsons will give his views on Experience with Large Rotary Drills. A discussion on Churn Drills and Mobile Drills will be led by L. E. Snow of the Kennecott Copper Corporation. A mathematical approach to the design and operation of heavy mining equipment will be given in T. M. Ware's address Scientific Mining Increases Profits.

Drilling and Blasting

Many notable gains have been made in this field in the past few years. Here is your chance to review the progress.

On September 21

Members meeting with this group will hear a talk on Airleg Drilling Compared With Other Methods by Harry L. Miller of the American Zinc Co. A Symposium on Longhole Drilling will throw more light on the increased use of sectional steel as opposed to diamond drilling. Tell

Ertl will present a paper on Rotary Drilling in Hard Rock.

Milling and Metallurgy

The mill man will leave the 1954 Metal Mining Show with a thorough background of the progress made in ore concentration.

On September 22

Modernization of Kennecott's Magna and Arthur Mills should present a host of new ideas to try. This paper will be given by P. H. Ensign. A Symposium on Crushing, Grinding and Classification will bring out the latest techniques in that field. Other features will include Grinding and Classification at Humboldt Mill of Cleveland Cliffs; A Progress Report on the Aerofall Mill by R. J. G. Fleck of the Jones and Laughlin Steel Corporation. Kellogg Krebs will talk on New Features of Cyclone Design, and Trends in Heavy Density Flow-sheets will be the subject

of an address by R. Harold Lowe of the American Cyanamid Company.

On September 23

An afternoon meeting under chairman Norman Weiss will look into Modern Mill Design and Construction. Taking part in this will be M. W. Bowen of the Golden Cycle Corporation, O. W. Walvoord owner of the O. W. Walvoord Company, H. V. Hughes, Southwestern Engineering Company, and W. R. Easley, Manager, Western-Knapp Engineering Company. The Fluosolids Acid Plant at Yerington, the nation's first attempt at using a low grade sulphur ore, will be discussed by A. J. Gould of the Anaconda Copper Mining Company.

Uranium

Developments and problems of the rapidly expanding uranium industry will be highlighted in four conferences.

On September 21

Recent Colorado Plateau events will be discussed with emphasis on ore deposition theories and reserves. Talks to be given include Airborne Prospecting for Uranium, Calculation of Uranium Ore Reserves, and Estimation of Uranium-Vanadium Reserves. Structural and lithologic controls that effect deposition of uranium-bearing minerals will be featured in other talks.

On September 22

In a morning meeting, the mining and metallurgy of uranium will receive a thorough airing. Dan M. Kentro will present a Summary of Methods Used in Extracting Uranium from its Ores. A discussion period will follow. Other subjects which will be covered are Drilling Techniques on the Colorado Plateau, and Mining and Development of the La Salle Ore Body.

An afternoon session will hear a panel discussion of the AEC Program on the Colorado Plateau. Later, a report on the Big Indian Mining District will be given by M. K. Rud-dock.

On September 23

Developments throughout North America in the uranium industry will be heard. Geologists should find this meeting of special interest. Papers to be presented are Weathering of Uranium Deposits; Southern Basin Ranges of Nevada and California; Tertiary Basin Deposits of Wyoming; and the Black Hills Deposits. Canadian Uranium Deposits of the Al-

(Continued on page 104)

Exhibit Briefs

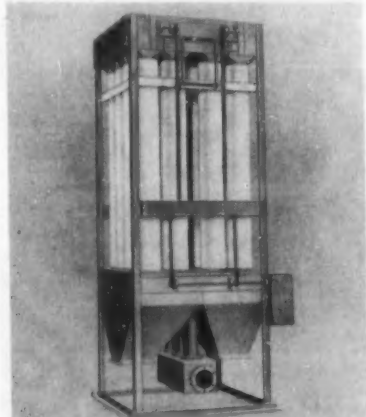
Exposition Features All That's New in Mine and Mill Machinery



AERO SERVICE CORPORATION: The usefulness of the airborne magnetometer (1) in domestic and foreign exploration will be shown at this exhibit. Other features of the booth will be air mapping displays and a new relief model, used by geologists and mining engineers. Charles M. Hodell, vice president, will be in charge of the booth.

ALLEN-SHERMAN-HOFF PUMP COMPANY: This exhibit will feature the firm's new Centriseal pump (2) used on abrasive and/or corrosive fluid-solid mixtures. The Centriseal pump, which requires no gland seal water, is totally lined with rubber or synthetic substitutes.

AMERICAN AIR FILTER COMPANY, INC. will feature dust collection equipment with emphasis on the AMERjet fabric ar-



rester (172). Also included in the display will be oil bath cleaners for use on engine and compressor intake air (173).

AMERICAN BRATTICE CLOTH CORPORATION: Mine Vent Flexible Tubing (6), for use in underground mines, will be demonstrated at the American Brattice Cloth Corporation booth. Catalogs and literature will also be available.

SEPTEMBER 1954

ALLIS-CHALMERS MANUFACTURING COMPANY—Processing and earth moving machinery will be highlighted in this exhibit. Included will be operating 4 by 8-foot rod deck screens (366) and by 2½ by 4-foot low head screens (367); models of Hydracone (368) and A-1 jaw crushers (369), grinding mills (370), solids handling and rubber-lined pumps (371). The tractor division will be showing a TS-300 motor scraper (372), motor graders (373), torque converters (374), and crawler tractors (375).

ALLOY STEEL & METALS COMPANY: This booth will consist of the firm's regular display cabinet, including operating pictures and models of Pacific Slushmaster scrapers (3) and the improved Pacific Round-the-Corner Sheave Block (4), and a new heavy-duty manganese steel front idler (5) for crawler type tractors. John M. McKean will be in charge.

AMERICAN MANGANESE STEEL COMPANY: Featured here will be the new Magnetic Flux welder (7) with demonstrations of how the unit works; a model Amsco renewable lip dipper (8); a double wave liner for ball and roller mills (9); and a complete line of hardfacing welding applications (10).

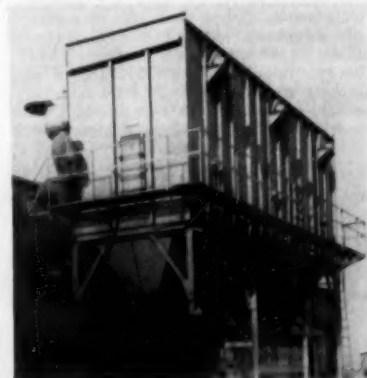
AMERICAN MINE DOOR COMPANY: These three booths will display the firm's Model 40 Track Cleaning machine (11) and the Electric Track Switch Thrower (12) which is used on selective or derail switches. Both pieces of equipment will be fully operating and will be set off by an animated background display.

Unable to Attend?

Literature and information on the products displayed may be obtained by filling in the number appearing after each item of equipment on the Yellow PEP postcard in this section and mailing.

ANACONDA WIRE AND CABLE COMPANY will display 3-dimension illustrations of various underground and surface mining processes. Latest developments in mine cable, including an improved shuttle car cable, and shielded and non-shielded cables will also be shown (14).

AMERICAN WHEELABRATOR & EQUIPMENT CORPORATION will highlight a cut-away model of an actual full-sized No. 5 model 112 Dustube dust collector (13) which is used for recovering dusts given off during car dumping, crushing, sampling, etc. and to collect fume from blast furnaces, sintering machines, and other hot operations in non-ferrous smelters. The machine, which uses cloth tubes, reportedly has a collection efficiency above 99 per cent and is capable of handling par-



ticles in the low micron range. In charge of the exhibit will be Robert T. Pring, technical director.

ATLAS POWDER COMPANY's booth will feature the firm's new generator type condenser-discharge blasting machine (15), machine gun photographs of Rockmaster blasting techniques, and a motion picture, "The Inside Story." Other material at the booth will demonstrate confinement of explosive gases and maximum breakage

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achieved with millisecond delay blasting. J. H. Dannenberg, assistant advertising manager, will be in charge.

BALDWIN-LIMA-HAMILTON CORPORATION—See a photographic exhibit of the line of Lima shovels, cranes, and crush-



ing equipment at booth number 2019. For more information on their products fill in no. (174) on your card. T. A. Griffin will be in charge of the booth.

BARBER-GREENE COMPANY will have components of its conveyor line mounted in its booth. Among these will be standard belt troughing idlers (387) and return rollers (388), impact carriers (389), chevron return rolls (390), and a self aligning carrier (391). A daily raffle will be held and the winner will receive a scale model Barber-Greene bucket loader as a prize. H. W. Newton will be on hand at the booth.

BEMIS BRO. BAG CO. will feature Flexi-pipe (16), a collapsible ventilation tubing and accessories used to direct a supply of fresh air in mines and tunnels. Detachable and sewed couplings along with the three types of tubing suspension will also be displayed.

BICO, INC. will feature its line of assay laboratory equipment. Included in the display are Chipmunk jaw crushers (404), UA pulverizers with either flat-belt or V-belt drive (405), vertical no. 6 disc grinder (406), Porter sieve shaker (407), No. 40 assay furnace (408), cupels (409) gasoline and propane burners (410).

BOYLES BROTHERS DRILLING COMPANY, LTD. of Vancouver, Canada, will demonstrate surface (21) and underground (22) diamond drills ranging from 200 to 2,400 feet depth capacity. The underground drills, incorporating vane and piston type

motors and coring and blasthole gear feed swivelheads, will include a model of the JVR blasthole drill (23), featuring revers-



ible motor and right hand threaded feed-screw. D. R. Montgomery, sales manager, will be in charge.

BETHLEHEM PACIFIC COAST STEEL CORPORATION: A yielding arch section (17), a new type of mine roof support, will be the feature attraction at Bethlehem Pacific's exhibit. Other steel products—shaft, slope, and slusher wire rope (18),



carbon and alloy drill steel (19), and expansion head and slotted type mine roof bolts (20)—will also be on display. In charge of the booth will be division managers George M. Huck, Colby Howe, and Frank T. Saunders.

BRODERICK & BASCOMB COMPANY: The exhibit, featuring yellow strand wire rope (24) and yellow strand braided safety slings (25), will illustrate wire rope applications by means of illuminated sections, moving translights, and enlarged end views. Fred Zimmerman, vice president, sales, will be in charge of the booth.

THE BUDA COMPANY (Division of Allis-Chalmers Manufacturing Company): Two new models, 8DAT-1125 Turbo-charged Diesel engine (29) designed for powering haulage and mining trucks and a 6DA-970 Shovel Power Unit (30) with Torque Converter unit for powering shovels, draglines and cranes, will be displayed. In addition, a small Diesel electric generator set (31), for furnishing power and light around an open pit mine, is to be shown at the booth.



BRUNNER & LAY, INC.: In addition to their line of tungsten carbide Rok-Bits (26), Brunner and Lay will exhibit drill steel, Intra-Set Long Hole Drilling Tools, Sabur Points, and carbide Whirl-Bits (27).

BUCYRUS-ERIE COMPANY: A working model of the 6-cubic yard 150-B electric shovel (28) is to be featured at Bucyrus-Erie's booth. Scaled down to 1/12 actual size, the model will perform all shovel



functions—hoist, swing, crowd, retract, propel—using an actual operator's station from a full size machine. Supervising the exhibit will be R. M. Dickey.

E. D. BULLARD & COMPANY: This industrial safety equipment manufacturer will display a complete line of glass fiber and aluminum safety hats and caps (32), Bullard-Burnham safety hooks (33), first aid kits and supplies (34), safety belts, face shields, protective clothing, eye and



respiratory protection (35), Tacco safety truck steps (36), blasting hoods, and fresh air purifiers (37). Sales Manager E. W. Bullard will head the staff at the booth.

CATERPILLER TRACTOR COMPANY: A new unit in the Caterpillar line, the DW 15 rubber-tired Tractor (40) and No. 15 Scraper (41), will be on display. Also at the booth will be Caterpillar's No. 6 shovel (42), No. 12 Motor Grader (43), D8 Tractor with an 8U Bulldozer (44) and an Ateco Ripper (45), D8 Tractor with a Gardner-Denver Compressor and



Drills (46), and a Cat Diesel Electric Set (47). W. H. Hogen is to be in charge.

C & D BATTERIES, INC. To be displayed at this booth are the Slyver-Clad mine locomotive batteries (304), stationary bat-



teries for control (305), switchgear (306), and auxiliary power batteries (307). Howard Toncray will be in charge.

C. S. CARD IRON WORKS: Operating models of various types of mine cars (38) and locomotives (39) in simulated mining conditions will be at the C. S. Card



Iron Works booth, with special attention on detail of cars, trucks, wheels, skips, etc. D. C. Card will be in charge.

CHICAGO PNEUMATIC TOOL COMPANY: These two booths will include the full line of Airleg-Sinker Drill combinations (48) and a Rotauger (49), a new



Unable to Attend?

Literature and information on the products displayed may be obtained by filling in the number appearing after each item of equipment on the Yellow PEP postcard in this section and mailing.

rotary air drill for soft formations, which drills 2½ inch holes at two to four feet per minute to depths of 100 feet or more. Drill arms (50), stopers (51), demolition tools (52), diamond drills (53), wagon drills (54), drifters (55), and pneumatic tools complete the exhibit.

CHIKSAN COMPANY: The new Intelli-Giant hydraulic mining gun (56) will be highlighted at the Chiksan booth. Available with manual hydraulic controls or with remote controls for the operation of several Giants by one man, the gun is said to effect substantial savings in labor costs and increased efficiency. John Mischovich, well-known Alaska miner and inventor of the machine, will be on hand to demonstrate. A full scale unit will be on display, and a working model will be operated by visitors to the booth. Also to be shown are Chiksan ball bearing swivel joints (57), unions (58), and petroleum drilling equipment (59).

COAST MANUFACTURING & SUPPLY COMPANY: A drift round reproduction, showing application of Spittercord (64) to rotational firing of safety fuse rounds from a single point of ignition, will be the focal point of this booth. F. W. Nelson, field engineer, will be in charge.

COLORADO FUEL & IRON CORPORATION: A four-booth hospitality center (Booths 1110, 1112, 1114, 1116) has been set up by the Colorado Fuel & Iron Corporation for visitors to the Mining Show. Comfortable seating, telephones, a secretarial service—for letter writing, telegram sending, long distance phone calls, and hotel and transportation reservations—and an information booth will be maintained at the center. For information on their products use no. (113) on your card.

CONVEYOR COMPANY—New items to be introduced to the mining market for the first time will be seen at booth no. 217. A new type Conveyco vibrating screen (175) and two types of conveyor scales (176) which reportedly utilize a new

principle will be on display. In charge will be R. H. Robinson.

CHRISTENSEN DIAMOND PRODUCTS COMPANY'S exhibit will include standard core bits (60) showing variations in waterway arrangement, diamond size and grade, and matrix hardness. Concave bits



of all designs; reaming shells, including balanced, insert, and hard-faced varieties also will be shown. Also on display will be casting shoes (61) and casing bits (62), and the new series C-2 core barrel (63), which features heavy wall tubing for use under severe mining conditions.

COPCO PACIFIC, LTD.: Atlas rock drills (65), Coromant drill steels (66), Copco's new AR series compressor (67), and Coromant's new line of detachable rock bits (68) will highlight the Copco display. Visitors will also have a chance to view a collection of mineral-bearing ores from mines using Copco equipment.

CRUCIBLE STEEL COMPANY OF AMERICA: Built around an exhibit of Hollow Drill Rods (69), Crucible's booth will also have a chunk of uranium ore complete with Geiger counters to help visitors guess the dollar assay. Also to be shown are Trentweld stainless steel tubing (70), Rezistal stainless steel (71), Rex-



DART TRUCK COMPANY: Three new truck models will be on display—a 35-ton end dump truck model 35 SA with air strut front end suspension. (75), 20 S

(76), and 10 S (77). All three feature shorter wheelbases. In charge is M. T. Kasper, regional sales manager, who will be on hand to answer questions.

weld hard surfacing rods (72), Max-el machinery steel (73), and Hy-Tuf nickel alloy steel bits (74).

CUMMINS ENGINE COMPANY, INC.—The new Cummins PT fuel pump will be the principal feature of the exhibit of the Cummins Engine Company. Provisions will be made so that visitors to the exhibit can assemble and disassemble fuel pumps. Two cutaway Diesel engines will show the PT pump (395) as it mounts on the engine.

DENVER EQUIPMENT COMPANY: The No. 24 Denver "Sub-A" Super Rougher Flotation Machine (79) with a suspended



unit shaft assembly will be shown. Also on exhibit will be the 16-inch Denver-Finney Classifier (80) and the Denver Automatic Sampler (81). On hand to discuss the equipment will be H. J. Gisler, chief metallurgist.

DETROIT DIESEL ENGINE DIVISION (General Motors Corp.): Cut-away engine



displays, a model 4-51 base-mounted power unit (82), 6-71 and 6-110 fan-to-flywheel Diesels will be among the displays. J. C. Campbell will head the personnel manning the booth.

DINGS MAGNETIC SEPARATOR COMPANY will show stereo slides and enlarged photos of drum and belt type wet magnetic separators (83) used in taconite beneficiation and heavy media cleaning plants. Emphasis will be placed on application of Alnico alloy permanent magnetic separators (84) to these units. K. L. Gille will be in charge.



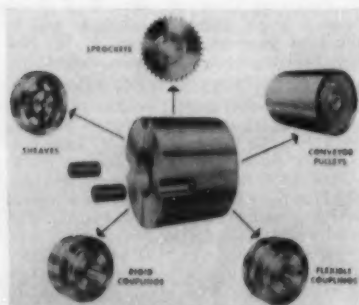
EUCLID DIVISION (General Motors Corp.): Visitors will have a chance to see both the S-7, overhung 7-yard hydraulic

DAVEY COMPRESSOR COMPANY: A new heavy-duty rotary air drill, Model M-8A (78), is the principal exhibit of Davey. Using a new "air-blast" technique,



it is recommended for core drilling, water well drilling, structure testing, and shot and blast holes.

DODGE MANUFACTURING CORPORATION: The Taper-Lock Bushing (85) will be the feature attraction display at Dodge's booth. Its interchangeability in



sprockets for roller chains, V-belt sheaves, etc. will be demonstrated. An island display will consist of a sectioned Taper-Lock Solid Steel Conveyor Pulley (86). Supervising the booth will be L. O. Carroll, district manager.

scraper (97), the 15.5-yard torqmatic scraper (98), and the 22-ton torqmatic drive rear dump (99).

DUNKIN BLUE PRINT & SUPPLY COMPANY: The latest uranium mining and geologic nationwide maps (87), details on the firm's anomaly and information subscription plan (88), and the three dimensional mine map developed by R. Davenport (89) will be on exhibit. Mr. & Mrs. J. E. Dunkin will be on hand to answer questions.

E. I. DU PONT DE NEMOURS & COMPANY, INC.: Featured will be du Pont blasting agents for open pit mining (90), MS delay electric blasting caps (91), du Pont CD blasting machines for electric firing (92), and thermalite "Ignitacord" (93). S. M. Strohecker, Jr., will head the booth's staff.

EIMCO CORPORATION will display several new pieces of mining equipment which have been designed and constructed with an eye to greater efficiency. More information on these new units may be obtained by filling in number (94). In charge of the booth is J. K. Russell.

ELECTRIC STEEL FOUNDRY—At this booth the ESCO two piece renewable teeth (290) and stainless steel piping (291), valves (292), and fittings (293) for handling corrosive fluids will be shown. Also in the display will be several heat resistant castings (294). Norval Grubb will take charge of the booth.

ELECTRIC STORAGE BATTERY COMPANY: The Exide-Ironclad battery (100), with SILVIUM and polyethylene, will be



featured. Completing the exhibit will be a display of cutaway cells and batteries.

ENGINEERS SYNDICATE, LTD.—This display will be built around the latest de-



velopments in uranium exploration equipment. Featured is the Model SC-8 Portable Scintillation Counter (299), the Model SAB-7 optimum airborne scintillation counter (177), and the Inducto-Reel for logging drill holes (178). Other items included will be the Hossfeld Rock Drill (179) and recording equipment (180). Walt Bilicic will be in charge of the booth.

FISKE BROTHERS REFINING COMPANY will present moving displays showing LUBRIPLATE lubricants (102) used in the mining field. District supervisor H. E. Van Bevers will be in charge of the booth.

FLEXIBLE STEEL LACING COMPANY's exhibit will be built around the firm's 19-

foot incline conveyor, demonstrating uses of various Flexible Steel Lacing Company belt fasteners (103).

EQUIPMENT ENGINEERS, INC.: New models of Krebs Cyclones (95) and Clark-son Feeders (96) will be displayed. At the



booth will be Dick Krebs and Bob Clark-son to answer queries.

GEORGE E. FAILING COMPANY: A hydraulic chain feed blast hole rig, the Failing CBH Holemaster (101), will be



shown. The rig, a completely self-contained unit, has a rated capacity of blast holes to 400 feet using 2 7/8-inch drill pipe.

FARMERS ENGINEERING AND MFG. CO.: This display will be built around a collection of detection, indication, control and communication equipment. On hand will be Industrial Physics Tramp Iron Detector (411), Vincent Proximity Alarm (412), and FEMCO's extensive line of carrier equipment (413), Audiphone (414), and automation devices (415). Warren C. Sprague and Carl M. Marquardt are in charge of the booth.

FLEXIBLE TUBING CORPORATION: Two types of flexible ducting for mine and tunnel ventilation will be exhibited at this booth, Spiratube-M (379) and Ayrtube (380). The former is a lightweight reinforced fabric duct, which permits unimpeded air flow around bends. Ayrtube is a heavy duty pressure tube made of neoprene-impregnated fabric. H. W. James heads the group at this booth.

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FISHER RESEARCH LABORATORY: Portable geophysical equipment with special application to mining exploration



problems will be on hand. A complete line of Geiger counters (281), electro-magnetic (282), refraction-seismic (283), and ultra-violet equipment (284) will be shown.

THE GALIGHER COMPANY will display commercial-size units of most of the equipment handled by the firm in addition to a complete automatic working model of a sample mill operated through a specially built control panel. Get more information



on vacseal pumps (114), Agitair Flotation machines (115), Geary-Jennings Samplers (116), and other ore dressing equipment by filling in the above numbers on your card.

GARDNER-DENVER COMPANY will have the new Mobiljumbo (285), mine car unloaders (286), stopers (287) and other drills in its booth at the show. J. A. Caverly is in charge.

GATES RUBBER COMPANY is setting up a complete fabrication shop to show visitors how Rubber Faced Plate (105) can be fabricated. Prepared samples of these techniques will be available. Specialists will be available at the booth to give you personal answers to your specific problems. Hank Berry will be among staff members at the booth.

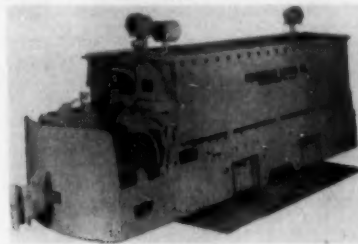
GENERAL ELECTRIC COMPANY: Electrical equipment for the mining industry will be the theme. An underground 1 1/2

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Literature and information on the products displayed may be obtained by filling in the number appearing after each item of equipment on the Yellow PEP postcard in this section and mailing.

ton trammer and a wide variety of motors will be shown. The motors will include those with special features for driving flotation cell impellers, slusher hoists, conveyors, and shovel equipment (181). This booth will be under the direction of R. D. Ketner.

GOODMAN MANUFACTURING COMPANY: The exhibit includes a 1 1/2-ton Mancha Little Trammer (106) which features a new cam operated controller, an

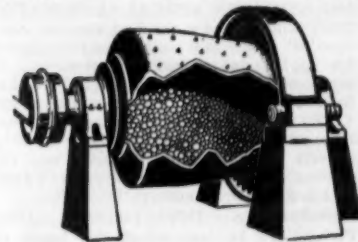


improved lever brake, and a deadman foot switch; the 6-ton Mancha Diesel Locomotive (107), and the 9-ton Mancha Storage Battery (108), which will be set up on blocks to permit operation.

GOULD NATIONAL BATTERIES, INC.: The Gould "Plus Performance Plan," designed to help battery users obtain longer life and improved performance, will be highlighted. Proper selection, charging, maintenance and repair techniques will be described. In addition, the various types of batteries (378) for mine haulage will be available for examination. J. S. McCullough is in charge.

GUSTIN-BACON MANUFACTURING COMPANY: A new product for the mining field, a lightweight grooved-end pipe coupling, Gruvajoint (182), along with this company's complete line of couplings and fittings will be shown. W. F. Teague on hand to answer questions.

HARDINGE COMPANY, INC.: Glass working models of Hardinge equipment, including the Hardinge Tricone mill (109), the Hardinge Thickener (110),



and the Hardinge Automatic Backwash Sand Filter (111), will be shown in addition to an animated flow sheet and illuminated photo background.

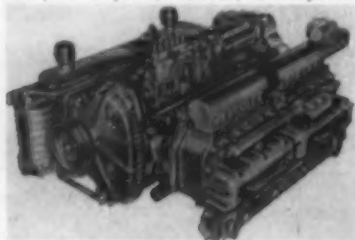
HARNISCHFEGGER CORPORATION will introduce the new P & H electric control system for electric shovels (401). Visitors will view a full scale operating replica of this modern control. A cutaway model of P & H magnetorque (402), a friction free power drive for electric shovels, will demonstrate the operation of this unit. Models of P & H welding and hoist equipment will also be shown (403).

HAZARD INSULATED WIRE WORKS DIVISION (The Okonite Co.): Portable cables (112), featuring "engineered-for-



the-job" advantages, will be displayed. Thomas R. Weichel, mining electrical engineer, will be available to discuss electrical cable problems.

HERCULES MOTORS CORPORATION: Models representing Hercules' complete line of engines will be on display. These include a 4-cylinder Diesel (117) and a 6-cylinder Diesel (118), and three power units, a 2-cylinder Diesel, a 4-cylinder



gasoline unit, and a 6-cylinder Diesel (119). Applications of these engines to many new areas and conditions will be discussed at the booth by William Brumback, manager of West Coast operations.

HERCULES POWDER COMPANY: "Where explosive knowledge pays off" will highlight this exhibit. A condenser titan blaster will be displayed for the first time along with other supplies such as Hercomite (183), Gelamite (184), V. A. O. Blasting Meter (185), Short Period Delays (186), and Regular Electric Blasting Caps (187). Directing activities at the booth will be George B. Bossert.

HEWITT-ROBINS, INC.: Special attraction will be the Robintronic Level Indicator (120) which shuts off feeders when chutes clog or bins fill. Also on display will be Eluptex and Vibrex vibrating screens (121), a heavy duty car shakeout (122), an electrically heated vibrating Gyrex screen (123), one of the firm's new small vibrating conveyors (124), and a 45-foot mine conveyor (125) in action. R. U. Jackson, manager of mine conveyor sales, will be in charge.

HOUSTON TECHNICAL LABORATORIES will show for the first time its new line of geophysical instruments designed for application in mining exploration. A high resolution seismic system (227) and a lightweight Worden geodetic gravity meter (228) will be on display. Information also may be obtained on seismometers (300), blasters (229), amplifiers (230), and recording oscillographs (231). John Weber will describe equipment at the booth.

HUMPHREYS INVESTMENT COMPANY: To be featured at this booth is an operating Humphreys spiral concentrator (126). Merrill Welker will be in charge.

IOWA MANUFACTURING COMPANY will demonstrate several working models



LESCHEN WIRE ROPE DIVISION (H. K. Porter Co.): With an illuminated

of their equipment, including the Cedarapids Double Impeller Impact Breaker (188), the Cedarapids Schrock Motorized Head Pulley (189), and the Cedarapids Horizontal Screen (190). There will also be an 8 by 20 foot display with a number of translights of equipment. O. E. Whitney heads the group at the booth.

INGERSOLL-RAND COMPANY: Examples of the I-R Rock Drill line (127), including Carset Jackbits (128), and operating models of other air operated tools will be on display. In charge of the exhibit will be L. H. Geyer.

INTERNATIONAL NICKEL COMPANY, INC. will show a background display of the many uses of nickel and nickel alloys in the mining industry. Applications in rock drills, crusher shafts, mine cars, skips, grinding mill liners and balls, classifier equipment and pumps will be featured.

JEFFREY MANUFACTURING COMPANY: 1,500 feet of floor space will be devoted to operating equipment, including the Mud Hog crusher with traveling breaker plate (129), electric vibrating feeders (130), Aerodyne fans and blowers (131), and a 36-inch-wide, 56-foot-long belt conveyor (132).

JET-LUBE, INC. will display its line of lubricants, including multi-purpose and gear greases (133), thread compounds (134), and specialized heavy equipment oils (135). At the booth will be Frank E. Bergeron, vice president, development.

JOY MANUFACTURING CO. At this booth will be several new machines, new electrical controls and connectors for electrically driven slushers and other improved models of existing lines. On display is a new rotary drifter for long-holing (354), new blast hole drill for open cut mining (355), electrical connectors and start and stop electric control for remote control operation of electric slushers (356), new mobile drilling rig for underground drilling operations (357), Joy airlegs with push button control (358) and Joy-Truco diamond core bits.



KENWORTH MOTOR TRUCK CORPORATION: This exhibit will feature a Kenworth Model 802, a 24-ton end dump truck, powered with a 300 horsepower engine (386). Incorporated in the unit is Torqmatic transmission and Torqmatic brake.

KOEHRING COMPANY: The attraction at this booth will be the 6-cubic yard hauling unit, the Koehring Dumptor (288), which has found application in underground mines, on open pit ledges, and narrow haul roads.

LE ROI COMPANY: The Cleveland Rock Drill division will exhibit a new range of Model H10AL single extension and telescopic air leg drills (136), Model H12 55-pound hand-held drills (137), and Model S12 90-pound stoper drills (138). In charge will be N. W. Reinker, assistant to the vice president.

LESCHEN WIRE ROPE DIVISION (H. K. Porter Co.): With an illuminated background of enlarged industry and plant

photographs, the Leschen booth will show samples of wire rope (139) used in mining operations. Main feature will be Hercules Red-Strand wire rope (140).

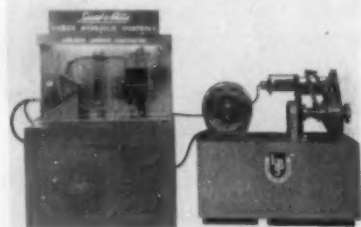
LETOURNEAU-WESTINGHOUSE COMPANY: Highlight will be the Model C Tournatractor (141) and the Model C Tournapull (142). Continuous showing of



a new color-sound film on the firm's mining equipment will also be featured at the booth. Fran Duke, western sales manager, will be supervising the booth.

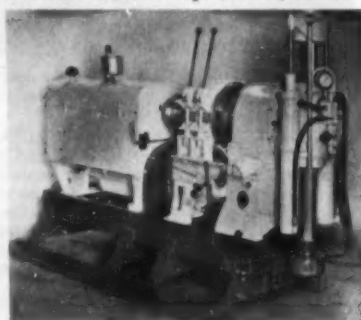
LINK-BELT COMPANY: Importance of belt conveyors (143) will be emphasized at Link-Belt's exhibit. A cross-section of a 60-inch-wide belt conveyor capable of handling 100 tons of ore per minute will be shown. Background will include photos of the ore handling system recently installed for Orinoco Mining Company at Puerto Ordaz, Venezuela.

LINK-BELT SPEEDER CORPORATION: A small model of Speeder K-375 dragline (144) and a backwall display showing



color transparencies of shovel-crane operations will be the main attractions. Speed-o-Matic power hydraulic control systems for shovel cranes (145) will be demonstrated.

E. J. LONGYEAR COMPANY: This exhibit will point up a new diamond core drill (146) which has been designed for AX size holes to depths of 4,000 feet.



Longyear wire line core barrel (147) will also be shown, and a special display will emphasize Longyear's consulting services (148). H. A. Kurtze is in charge.

LUDLOW-SAYLOR WIRE CLOTH COMPANY will present samples of their Rek-Tang (149), Sta-Tru (150), Sta-Clear (151), and Sta-Smooth (152) mining screens, together with an assortment of Industrial Wire Cloth (153). Specially

featured are abrasion-resistant mining screens. E. D. Robson and Earle N. Clemens will be in charge of the booth.

MARION POWER SHOVEL COMPANY: Slides and photographs of Marion machines in operation will be shown at this



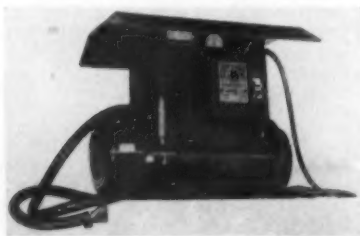
booth. For further information on Marion's line of mining equipment fill in No. (154). In charge of the booth is Harold E. Bonecutte.

MAYHEW SUPPLY COMPANY will bring a Mayhew Hurricane Portable Rotary Air Drill (191) to the show. This drill has found applications for blast hole drilling in quarries, strip mines, open pit mines and as a core drill for sampling uranium ores. The truck-mounted unit is powered by the truck engine. An integral compressor or mud pump, permit cuttings to be removed by either air or fluid.

MINE SAFETY APPLIANCES COMPANY: Edison Electric cap lamps (155), the MSA Minephone (156), and MSA Hoistphone (157) will be on display, as well as a complete line of safety equipment (158). Supervising the exhibit will be vice president C. M. Donahue.

MINING WORLD'S own display will feature a \$100 prize in gold for the most accurate estimation of the U_3O_8 content of a sample of uranium ore. Several types of scintillation counters will be available to enable visitors to judge the assay. Those attending the convention can stop at our rest station, see some outstanding photographs of world mining operations, and pick up free copies of the September issue.

MOTOR GENERATOR CORPORATION will exhibit Hobart Automatic battery chargers (159). Detailed information on

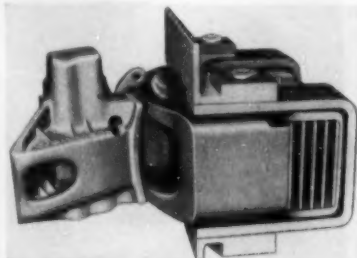


both single and multiple circuit units will be available from Howard Toncray at the booth.

NAGLE PUMPS, INC. will have on hand several pumps for mine and metallurgical applications capable of handling abrasive, corrosive, or hot liquids and slurries. Featured will be the Type AW horizontal shaft pump for handling clear, corrosive liquids (270), Type T, open or closed impeller pump for either clear or abrasive mixtures (271), and the SW-OB vertical shaft pump for corrosive material (272). Activities at the booth are directed by Perry Nagle.

SEPTEMBER 1954

NATIONAL MALLEABLE & STEEL CASTINGS COMPANY will point up full-size assemblies of Willison automatic couples (160) and National rubber draft



gears (161). Also on exhibit will be the National NC-1 and NC-1a trucks (162). **NORDBERG MANUFACTURING COMPANY** plans to feature the theme "Engineering for Profitable Operation" by displaying models of their line of mining machinery. Special information on the Gyradisc (163), fine reduction crusher, will be available. Overseeing personnel at the booth will be R. E. Schulz, advertising manager.

NORTHWEST ENGINEERING CO. will highlight their line of equipment in several photographs featuring draglines (392), cranes (393) and pull shovels (394) at work on various projects.

OHIO BRASS COMPANY: At this booth will be an exhibit of overhead trolley wire fittings (164), aluminum and copper feeder cable fittings (165), rail bonds (166), and collectors for locomotives (167). Also on display will be fused taps (168), rail clamps (169), expansion shells (170), and plugs for roof bolting (171). J. H. Sanford is scheduled to be in charge.

OLIVER UNITED FILTERS INC. will mount a cutaway section of the Oliver Centriclone (192), and scale models of new types of industrial filters (193) which are used in metallurgical fields at their



Unable to Attend?

Literature and information on the products displayed may be obtained by filling in the number appearing after each item of equipment on the Yellow PEP postcard in this section and mailing.

booth. The centriclone uses an internal impeller to impart the required circular velocities to the slurry for classification of particles. C. W. Crumb and J. B. Hoxie will be present at the booth.

PIONEER ENGINEERING WORKS, INC.—A quarter scale operating model of a complete crushing and screening plant will demonstrate the Pioneer line of equipment. The model features fully authentic reproductions of Oro manganese steel feeders (194), jaw crushers (195), triple roll crushers (196), vibrating screens (197),



and conveyors (198). W. A. Rundquist will be in charge.

PRECISION RADIATION INSTRUMENTS, INC. will present a complete line of Geiger Counters (199), Drill Hole Counters (200), and Scintillators (201). The Model 118 Royal Scintillator (202), a highly sensitive instrument, will be featured. L. Norman, will be present to demonstrate applications.

RAYBESTOS-MANHATTAN, INC. will introduce the Poly-V Drive (203), its latest development; also new conveyor belt developments (204) along with the general line of industrial rubber products (205) will be shown. A. L. Hawk and S. V. V. Hoffman will direct activities at the show.

REICH BROS. MFG. CO.—The Model 600H, Heavy Duty Truck Mounted Rotary Blast Hole Drill (206) will be on display. It features compressed air for removal of cuttings. Information will be available concerning Reich Bros. complete line of truck and crawler-mounted rotary drills (207). W. L. Reich will be able to answer questions at the booth.

RELANCE ELECTRIC AND ENGINEERING CO.—A mobile display bus demonstrating the uses, applications, and types of electric motors (208), motor drives (209), and control devices (210)



made by this company will be present at the exhibit. Equipment shown will range from specific purpose a-c. and d-c. motors to Reliance Adjustable-Speed V-Drives (211) and electronic regulators.

JOHN A. ROEBLING'S CORP. A comprehensive range of wire rope constructions (212), electrical wire (213), and cable (214) for mining applications will be

shown at a colorful display. Albert Neroni will represent the company at the booth.

SANFORD DAY IRON WORKS—A plastic model of Sanford-Day's latest design in Granby Mine Cars (215) will be on hand illustrating how the frame construc-

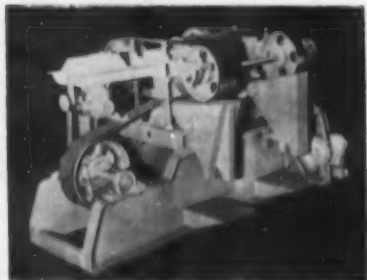


tion is supported on spring boxes outside the wheels. Also on display will be a model of the 1-2-3 drop bottom car (216) and S & D Ball Bearing Wheels (217). W. D. Moreman will be in charge.

SIMPLEX WIRE & CABLE CO. at booth 3009 will have on display various samples of insulated wires and cables used in non-metallic and metallic mining. These will include cables for permanent mine installations (218) and for mobile equipment (219) covering a range from 600 volts to 20,000 volts.

SMITH ENGINEERING WORKS will use a cut-away working model of the Tel-smith Gyrasphere Crusher (220) to demonstrate this unit. This model is sectionalized in such a way as to clearly show all of the working parts of the crusher, with its roller bearings, piston ring, long stroke eccentric, and spring relief protection.

SOUTHWESTERN ENGINEERING COMPANY—The services of this company as engineers and constructors-manufacturers (221) in the field of mining and metallurgy will be highlighted at SWECO's booth. The new 3-D screening action of the SWECO separator (222) will be demonstrated with a 48-inch operating unit. An added attraction, a coffee bar, will be open throughout the show. Herbert V. Hughes will have charge.



STEARNS MAGNETIC INC.—On display at this booth will be an "R" type magnetic separator (361) to illustrate the method used in separating the magnetic and non-magnetic particles in ores. In addition, a magnetic pulley (362), a suspended cross belt magnetic separator (363), and cutaways of a magnetic clutch (364) and the company's new line of magnetic disc brakes (365) will be shown. William E. Barta is in charge of the booth.

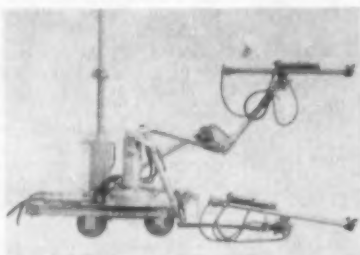
STEPHENS-ADAMSON MFG. CO. Featured at the exhibit will be new type Simplex Carriers, in 5, 6, and 7-inch diameters (223), along with an all manganese heavy pan feeder (224). An operating Natural Frequency Conveyor will illustrate the smooth operation of this unit. Samples of S-A Sealmaster anti-friction bearings (225) and other products will be exhibited. The display will be under the direction of E. C. Barkstrom.

STOODY COMPANY—Several pieces of mining equipment rebuilt and hard-faced with Stooddy alloys will be shown. Welding demonstrations of the Stooddy Magnecote



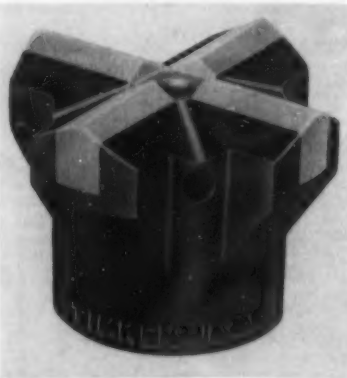
process (226), a method of applying magnetic alloy fluxes with standard semi-automatic welding machines will be held. A. W. Anderson will be in charge of the display.

THOR POWER TOOL COMPANY will offer a Thor two-boom jumbo (232) mounting a Thor 3½ inch Power Feed Drifter (233) and a Thor Air Bar Feed



with 3-inch drifter (234). The new Thor Raiser Leg (235) for stoping operations with a conventional sinker drill, and the Thor No. 380 Push Feed Drill (236) with integral sinker mount will be shown.

TIMKEN ROLLER BEARING CO.—This manufacturer of carbide insert and multi-use rock bits will have those products on



display at the Mining Show. Both types of bits are interchangeable in the same thread series, and both fit the same drill steel (237). E. H. Austin will be among those present at the booth.

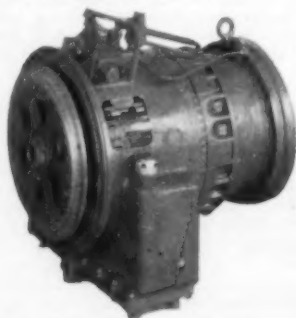
TRAYLOR ENGINEERING COMPANY—The operation of a large gyratory crusher (238) will be demonstrated in a cut-away view. Photographic enlargements of converters (239), ball mills (240), roll

crushers (241), and jaw crushers (242) will round out the display. C. H. Roberts and others will be on hand to answer questions.



TRACTOMOTIVE CORPORATION will feature the TL-12 Tracto-Loader, a four-wheel drive loader and light excavator with torque drive and clutch type transmission (376). The TL-10 Tracto-Loder (377) with two wheel drive will also make up part of the display. J. T. Skinner will be on hand to answer questions.

W. S. TYLER COMPANY—Ty-Rock Screens (243), samples of woven wire screens (244), a Ro-Tap Testing Sieve Shaker (245), and Tyler Standard Screen Scale Testing Sieves (246) are to be featured at this booth. Bryant Currier will be on hand to answer questions.



TWIN DISC CLUTCH COMPANY—A transparent plastic working model of the Twin Disc three-stage hydraulic torque converter (396) will illustrate the operation of this unit. A torque converter with selective direct drive range is to be shown (397). Additional display items include Hydro-Sheave fluid coupling units (398) hydraulic and friction power takeoffs (399) and friction clutch units (400).

UNION WIRE ROPE CORPORATION will have their new Tuffy sling peg board display on which the complete line of slings will be shown. Other mining ropes, including Tuffy slusher rope (301), Tuffy dragline ropes (302), and Tuffy scraper ropes (303) will also be included. R. B. Board at the booth will answer questions.

UNITED STATES RUBBER COMPANY: The focal point of the exhibit will be the U. S. Belt Surgeon who will demonstrate the splicing of conveyor belts. Prominently displayed will be the U. S. Super Ustex-Nylon conveyor belt (424). Among the other products to be shown are the U. S. Uscolite (plastic) pipe line (425), Packings (426), Hose (427), V-belts (428), and tape (429). H. E. Dadson is in charge.

UNITED STATES STEEL CORP.—The economy of utilizing selected steels will be emphasized. Carilloy T-1 (247), a new alloy plate steel with high shock and abrasion resistance and low temperature toughness will be introduced. Stainless steel (248), wire rope (249), tramway cable (250), electrical cable (251), mill liners

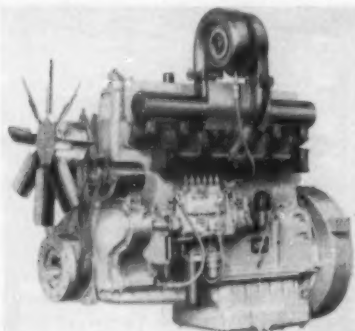
(252) and roofing (253) are also highlighted. H. B. Montross of the Columbia-Geneva Steel Division is in charge.

VAREL MANUFACTURING CO.—On display will be two new, small rotary cone-type rock bits of 2½-inch diameter with an "A" rod pin (254), and a 3½ inch bit (255) with an "N" rod pin. A complete range of larger sizes up through 12¼ inches in diameter will also be offered (256). Jack Brown will direct activities at the booth.

VASCOLOY-RAMET CORP.—Booth 400 will cover the Vascoloy-Ramet tungsten carbide mining tools (257) for mineral and nonmetallic mines. R. O. Moore will be in charge of the booth.

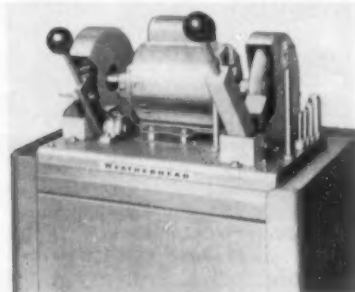
VICTAULIC COMPANY OF AMERICA—The Victaulic method of piping will be featured at the booth. Products to be displayed will be Victaulic Couplings sizes ¾ inches through 60 inches (258), Light-weight couplings in 2, 3, and 4-inch sizes (259), and Snap-Joint couplings (boltless toggle) (260). Dick English is in charge of the exhibit.

WAUKESHA MOTOR COMPANY will show a typical turbo-supercharged truck and industrial diesels. Sharing the spotlight will be the new Model 135-DKBS engine



(261), with a 4½ by 5-inch bore, and the 1197-inch turbocharged Model WARDBS (262). A. G. Mulkey will arrange the exhibit.

WEATHERHEAD COMPANY—On display will be Ermeto Tube Connectors (295), industrial brass fittings (296), and



industrial hose (297). The CS-10 Cutting and Skiving Machine (298) for wire braid hose will also be featured.

WEDGE WIRE CORP.—Various screens in different metals, openings and wire profiles constructed for different applications and machines will be exhibited (263) at booth 3108. J. E. Parker will be in charge.

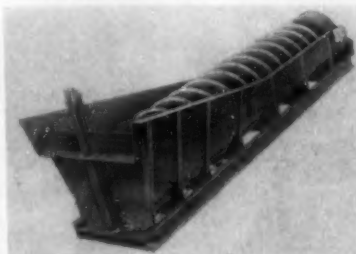
WESTERN GEAR WORKS—On display will be every known type of gear, all designed and built by this company. Featured are right angle (381) and parallel shaft speed reducers (382), cone speed reducers (383), gear motors (384), torque converters (385) and other transmissions.

SEPTEMBER 1954

WESTERN-KNAPP ENGINEERING CO.

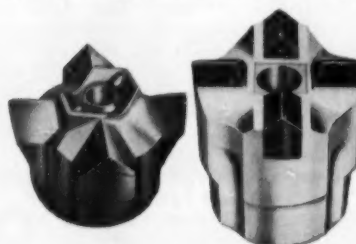
—This display will feature plant to finished plant sketches, drawings, and photographs. The many projects completed by this company will be illustrated with engineering and construction drawings (264). Charles Skinner and others will be on hand to discuss visitor's problems.

WESTERN MACHINERY COMPANY—Lucite models and actual operating units will be on hand featuring WEMCO's products. A 24-inch SH classifier (265) will be in operation. Models of Heavy



Media Separation plants (266), a 44-inch WEMCO Fagergren flotation cell (267), a solids pump (268), and diaphragm pump (269) will show operating features of these units. W. H. Newton is in charge of booth.

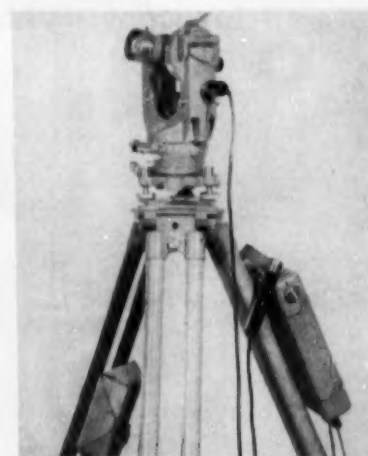
WESTERN ROCK BIT MFG. CO.—The single use Liddicoat bit (273), and the Liddicoat Tee Cee (274) (tungsten carbide) insert bit will be on display. Using a McGee-Hogan grinder, the ease of prepa-



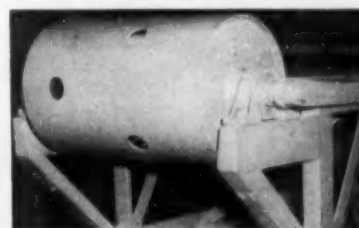
ration of drill steel for these bits will be demonstrated. The display is in charge of M. W. Hawkesworth.

WESTINGHOUSE ELECTRIC CORP. will exhibit its new Life-Line "A" motor and new d-c. sectionalizer (275) as well as control centers (276), gearmotors (277), and special slusher hoist motors (278). The manufacturing and service facilities available at the Sunnyvale, Calif. plant will be featured.

HENRY WILD SURVEYING INSTRUMENTS, INC. will feature Swiss made precision optical surveying instruments of the latest design. The Wild T-1 Optical Repeating Transit (289) for use underground is highlighted by "behind the instrument" operation.



YUBA MANUFACTURING COMPANY—On display will be a two-cell M-8 Min-



eral Jig in operating condition (279) to demonstrate controlled pulsating action. An internally driven Yuba-Schrock Motorized Pulley (280) will be shown. These pulleys are furnished in sizes ranging from ½ horsepower to 125 horsepower.

NEW YORK AIR BRAKE COMPANY will present at their booth fluid power equipment (416), liquid handling pumps (417), and vacuum pumps (418). Featured will be a complete line of heavy-duty Dual-Vane (419), gear (420), piston (421), centrifugal (422), and turbine type (423) pumps and fluid motors. Robert L. Firth will head the group at the booth.

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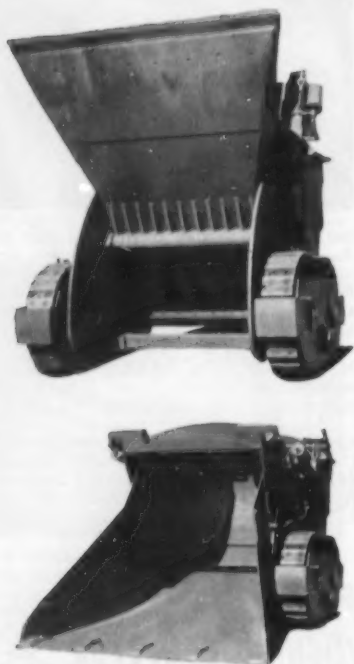
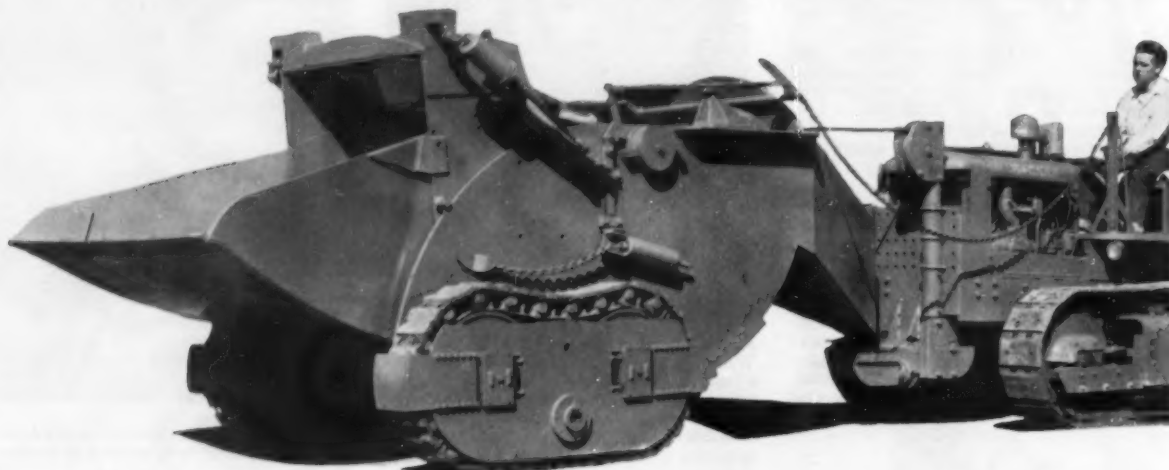
Write
for
Bulletin 301

[World Mining Section—57]

79

Available Soon...the GISMO!

— the hard rock self-loading transport that is making
low cost . . . high tonnage production history at Grandview!



Two photos above show extreme positions shovel mechanism takes while loading. Lower photo shows shovel ready to begin loading cycle and top photo shows position of shovel at end of cycle, loading material back into body.

YOU'VE SEEN ARTICLES on the results the Gismo method has been obtaining at American Zinc, Lead and Smelting Company's Grandview mine operation . . . the Gismo method that performs the entire excavation operation—drilling, loading and transporting rock to dump stations for transfer to the regular haulage system. Here are the latest figures through May, 1954, released by American Zinc:

The Gismo has raised tonnage per man-shift from 8.95 with conventional methods in 1950 to 36.28 in May, 1954.

It has cut labor costs per ton from \$1.57 in 1950 to 61¢ in May, 1954. Supply costs have been reduced from 63¢ to 49¢ per ton despite higher prices for supplies in 1953 and first half of 1954.

Requiring less development, the Gismo has more than halved development costs, requiring less than 50¢ a ton.

The Gismo method comprises—First, the Gismo, a crawler mounted self-loading transport with drilling attachment. Second, a crawler tractor of required size equipped with a winch, cable and controls.

How does the Gismo method work? Its operation is simple. The tractor moves a Gismo unit, converted to a stope drilling jumbo, to face for drilling. The tractor is then attached to a second Gismo and loading and transport of ore is started. For the purpose of grade control, operator may load out different headings and in desired proportions as required. The entire Gismo operation . . . digging, loading, hauling and dumping, is handled by only one man, the tractor operator. Tractor is constantly on the move.

Actual mine operation experience (2½ years) at Grandview has established as unquestionable proof: (1) The Gismo method of mining can cut your operating costs as much as 50% while increasing production many times. (2) This new equipment costs less than the conventional equipment it replaces. (3) Production savings by this Gismo mechanized method are so great that they enable the equipment to pay for itself in a matter of months. Write, wire or call us for complete information. Sanford-Day Iron Works, P. O. Box 1511 . . . Telephone 3-4191, Knoxville, Tennessee

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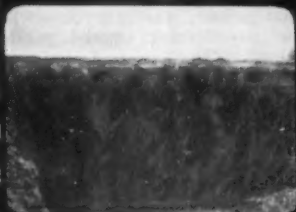
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PRINCIPLES OF
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To get "The Inside Story" for your organization, simply write to the nearest Atlas office listed at right or to our home office. Let us know approximately when you will want it, the type of meeting you are planning and we will be glad to work out the arrangements at no cost to you.

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ACTIVITIES OF U. S. MINING MEN

LOUIS P. GAGGINI, former manager of J. R. Simplot Company's uranium division, has formed his own consulting firm, Geo-Engineering, with offices in Norwood and Grand Junction, Colorado. Co-partners in the business are **LEWIS D. ANDERSON** and **HAROLD A. CULP**. Mr. Gaggin's uranium experience includes two years with the exploration branch of the U.S. Atomic Energy Commission and employment by the U.S. Vanadium Company. For two years he was mine superintendent of the Dulane Mining Company.



William E. Quigley, who has been with Anaconda Copper Mining Company since 1936, was elected assistant secretary-treasurer at a recent board of directors meeting in New York. From the Butte, Montana office of the firm comes the report that **David R. Nelson** will be Mr. Quigley's chief assistant. Mr. Nelson previously served as chief metallurgical accountant.

James A. Wilson, former manager of International Minerals & Chemical Corporation's Bonnie plant, at Bartow, Florida, has been promoted to the position of production manager for the phosphate chemical division. **Neil O'Donnell**, who has been acting superintendent of the Bonnie plant for several months, becomes plant superintendent.

Hubert O. De Beck, long-time consulting mining engineer with the United States Bureau of Mines, has resigned his position and accepted the post of consulting mining engineer for National Lead Company's Baroid Sales Division. Currently at Johnson City, Tennessee, Mr. De Beck expects his ultimate headquarters to be at Houston, Texas.

C. Howard George, vice president of New Jersey Zinc Company, has been named executive vice president of the firm, it was announced in New York City. Elected vice president of the firm was **L. S. Holstein**, who has been assistant to the president.

LANGAN W. SWENT, who has been assistant general manager of the San Luis Mining Company in Mexico, has been appointed administrative assistant to the general manager of Homestake Mining Company, **A. H. SHOEMAKER**. Mr. Swent, a mining engineer, worked at the Homestake mine in Lead, South Dakota in 1946 and 1947 before joining the Mexican firm, which mined silver and gold. According to Mr. Shoemaker, Mr. Swent will handle much of the detail work for the manager.



W. E. Horst, formerly with the U. S. Army Corps of Engineers, has joined the Foote Mineral Company research and development department as a metallurgical engineer.

Wylie F. McKinnon, former employee of the Reconstruction Finance Corporation, is the newly appointed director of the Federal Facilities Corporation's office of tin in Washington, D. C. Deputy director will be **Edward P. Chapman**.

Merle H. Guise, Grand Junction, Colorado, has completed an examination of uranium deposits near Moab, Utah.

Charles F. Allen, mining engineer and former project director for Winchester Laboratories, has been assigned to manage an experimental chemical pilot plant for the Stamford Research Laboratories of American Cyanamid Company in Waterbury, Connecticut. Before joining the Stamford staff Mr. Allen was a representative for American Cyanamid in the northwestern section of the United States and in Africa.

Richard N. Hunt, vice president and chief geologist of the United States Smelting, Refining, and Mining Company, has been elected to the directorate of the Hecla Mining Company, it was announced in Wallace, Idaho.

Two new superintendents have been named by the M. A. Hanna Company. **James Ivers, Jr.**, a general operating engineer of the Michigan district, has been appointed superintendent of the Homer Mine, near Iron River, Michigan. **J. D. McAuliffe**, also a general operating engineer in the Michigan district, will supervise the Wauveca mine, Iron River.

Lloyd A. Yesberger, who has been with Reserve Mining Company since the first engineering office of the company was organized in 1944, has been promoted to supervisor of the Duluth, Minnesota engineering department.

I. J. Hart, general manager and vice president of the Franklin Metals Company, Newark, New Jersey, has announced his resignation after 11 years with the firm.

Jesse W. Whitlow, a staff member for the United States Geological Survey, has been transferred from Shelby, North Carolina, where he was working on a monazite exploration project, to the Iowa Geological Survey, with offices at Platteville, Wisconsin. Mr. Whitlow will be working with **C. E. Brown**, chief of party, Iowa Zinc-Lead Project, mapping geology structure and mineral deposits of selected areas in the Dubuque district.

Two long-time employees of Kennecott Copper Corporation's Nevada mines division retired recently. **Willard Anderson**, prospect driller, left the firm after a 27-year association. **Dominic Detomasi**, retiring construction foreman at the concentrator, had been with the company since 1918.

ALBERTO F. THOMPSON, chief of the technical information service, United States Atomic Energy Commission, will be one of the featured speakers at the annual joint convention of the New Mexico Mining Association and Southwest International Mining Association. The meeting is to be held October 14 to 16 in Carlsbad, New Mexico. Dr. Thompson will talk on "The Coming Industrial Application of Atomic Energy." A pioneer in the development of atomic energy, he participated in the Manhattan Project in 1944, was on the AEC's Oak Ridge, Tennessee staff for several years, and has been at the Washington, D.C. office since 1947.



W. Andrew Wesley and **Norman B. Pilling**, staff members at the Research Laboratory of the International Nickel Company, Inc. in Bayonne, New Jersey, have been named for promotions in line with the firm's recently announced intensified research program. Mr. Pilling, who has been director of the Bayonne Laboratory, takes over as assistant to the vice president-manager of the company's development and research division in New York. Dr. Wesley, assistant director since 1939, succeeds Mr. Pilling as head of the Bayonne laboratory.

Carroll L. Wilson, director of industrial development for Climax Molybdenum Company and former general manager of the United States Atomic Energy Commission, has been elected vice president and general manager of Metals and Controls Corporation, Attleboro, Massachusetts. Mr. Wilson has been on the board of directors of the rolled gold and silver plate manufacturer for the past three years.

The United States Atomic Energy Commission's New York operations office has announced two new appointments. **Conrad H. Sullivan**, formerly with the AEC at Oak Ridge, Tennessee, has been named assistant general counsel. **Grace M. Wells**, information officer, succeeds **John F. Hogerton** as director of the public information service.

CHARLES C. AZBELL, sales director of the United Metals Company, has opened a branch mining office in Alpine, Texas, near the Quicksilver mining district in Brewster County. The firm is now engaged in mineral research, and Mr. Azbell reports that they have hopes of locating a uranium deposit in the district. Mr. Azbell is a former mining figure in the lead and zinc areas of Missouri.



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ACTIVITIES OF INTERNATIONAL MINING MEN

JOHN CHARLES PERRY, general manager of Lamaque Mining Company, Ltd., Burlamaque, Quebec, Canada, has been elected president of Lamaque, of the parent firm, Lamaque Gold Mines, Ltd., and of The Tack-Hughes Gold Mines, Ltd. Mr. Perry will continue to make his headquarters in Burlamaque. He began his career with Hollinger Consolidated Gold Mines, Ltd. in 1922. After serving with International Nickel Company of Canada, Ltd. for several years, Mr. Perry joined the staff of Tack-Hughes in 1927, and Lamaque Mining Company, Ltd. in 1934.



Robert W. Hernlund, mining engineer and Stanford University professor, is the first of eight specialists being sent to the Philippine Islands by the United States Foreign Operations Administration under terms of an assistance contract with the University of the Philippines. Professor Hernlund will spend two years teaching specialized courses and acting in an advisory capacity on engineering curriculum and on technical library and laboratory facilities. He was formerly sales promotion manager for Western Machinery Company in San Francisco, California.

John A. Engstrom, formerly unit superintendent at Topia, Durango, Mexico, has been transferred to Avalos, Zacatecas as manager of the Avalos unit of the Compania Minera de Ponoles, S.A., Mexican subsidiary of the American Metal Company, Ltd.

Larry Smith, general superintendent of Mindanao Mother Lode Mining Company, has resigned his position with the Philippine firm and returned to the United States.

A. D. Davidson, Sr., of the Acoje Mining Company, Inc. in the Philippine Islands, recently resigned as power plant and machinist superintendent. He was replaced by E. Scheider.

A. E. van Arkel, Dutch titanium expert, is spending the summer months at the Cambridge, Massachusetts laboratories of the National Research Corporation, where he is acting as a consultant. Dr. van Arkel is a professor of chemistry at the University of Leyden in the Netherlands and has gained international reputation for his work in the development of the "hot wire" process for making titanium and other metals from the iodide.

J. P. Bourdrez, general manager of the Netherlands Industrial Institute, visited San Francisco, California recently as part of a business trip to interest United States companies in setting up branch plants in Holland. At a press conference he revealed that three San Francisco firms were considering such investments. To

date, approximately 50 American firms have invested \$50,000,000 in the Netherlands, according to Mr. Bourdrez.

Edward Woosley, director of the United States Bureau of Land Management, has been on a 19-day tour of Alaska, meeting with applicants of Bureau resources in the area. Accompanied by **Lowell M. Puckett**, area administrator, and **Fred Weiler**, lands and minerals staff officer, Mr. Woosley expressed optimism about Alaska's future mineral development.

O. Kusano and **T. Kondo**, officials of the Mitsui Mining and Smelting Company in Japan, have been touring mining areas of the United States. Most recently guests of the St. Joseph Lead Company in Missouri, the visitors also have observed operations at Bagdad Copper Corporation, Bagdad, Arizona; Kennecott Copper Corporation, Chino Mines Division, Hurley, New Mexico, and the Eagle-Picher Company in Oklahoma.

L. Usani, formerly chief inspector of mines for Italian East Africa, has been put in charge of an ore-dressing research center in Rome, Italy, according to the National Research Council in Italy.

C. McLaughlan, manager of the Loraine and Jeannette mines of the Anglo American Corporation of South Africa, Ltd., succeeds **J. B. Mudd**, who has been transferred to the firm's head office in Johannesburg as an assistant consulting engineer.

F. B. Michell, vice principal of the Camborne School of Mines, Cornwall, England, has been elected a council member of the Institution of Mining and Metallurgy in London. Mr. Michell has just completed a survey of tin and columbite treatment methods for the Nigerian government.

Luis A. Nogales, former general manager of the Aramayo de Mines en Bolivié and Bolivian Tin and Tungsten Corporation, has been promoted to general production superintendent of the Corporacion Minera de Bolivia.

H. Lorenz has resigned as president and director of the South American Minerals and Merchandise Corporation, it was announced in New York City recently.

Ro Hai Young, Korean mining engineer, has become the first Korean to officially head a United Nations reconstruction project in his homeland. His new project will be similar to a recent investigation of the republic's mineral resources in which he assisted **Robert B. Hall**, United States geologist with the U.N. Korean Reconstruction Agency. Mr. Ro was put in complete charge of the latter phases of this earlier project, a gold placer operation, when Mr. Hall became ill.

W. B. Mather, chairman of the mineral technology department Southwest Research Institute of San Antonio, Texas, has returned to the

United States after spending four months studying phosphate deposits in Brazil.

A. L. Thomas, British mining engineer, has been appointed director of Geevor Tin Mines, Ltd., Cornwall, England. Mr. Thomas' mining experience includes several years in Canada, Malaya, and South Africa.

H. S. H. Donald, veteran South Africa mining figure, has retired from the position of alternate director for the Anglo American Corporation of South Africa, Ltd. From 1942 to 1946 he was Government Mining Engineer for South Africa, and has served the industry in various capacities for 47 years.

H. G. Schuring, who was formerly with the Neptune Gold Mining Company, Managua, Nicaragua, is now mill superintendent for the Atlas Consolidated Mining and Development Company in Cebu City, Philippine Islands.

Robert M. Reininger, executive vice president, was elected president of the New York and Honduras Rosario Mining Company to succeed the late **William A. Prendergast**. Mr. Reininger has been associated with the company for 15 years both in the New York offices and the Central American operations.



RUI RIBEIRO FRANCO, professor of mineralogy and petrography at the University of Sao Paulo, Brazil, is attending the Third International Meeting of the International Union of Crystallography in Paris, France. While in Europe Professor

Franco intends to visit many of the principal institutes of mineral research. He has recently completed a study of copper ore deposits in the Itapeva district, Brazil.

R. A. Glahn, mining engineer, has assumed the position of level foreman at the Andes Copper Mining Company, Potrerillos, Chile. Recently named mine superintendent at the operation is **John Hoffman**. Other appointments are **W. H. Dunstan**, assistant superintendent; and **T. Dudley**, general mine foreman. New employees at the mine are **S. Zentner** and **R. Chamberlain**, both from Butte, Montana, and **C. Foote**, from Ray, Arizona.

Rex F. Pearce has resigned as technical representative for South African Cynamid (Pty.), Ltd. in Johannesburg, South Africa, and accepted a position with Sherritt Gordon's nickel refinery in Fort Saskatchewan, Alberta, Canada.

J. C. Ferguson, director of the Southern Rhodesia Geological Survey, is now on leave in Portsmouth, England. He expects to return to Salisbury, Southern Rhodesia, in September.

Mining World

THE IMPORTANT MINING MAGAZINE EVERYWHERE

INTERNATIONAL PANORAMA

BEDFORD, PENNSYLVANIA—Sullivan Trails Coal Company of Pittston is reported to have struck a vein of manganese ore while prospecting at Cypher in Sherman's Valley.

TORONTO, CANADA—Noranda Mines, Ltd. will spend about \$7,500,000 in developing the Geco Mines Ltd. property in the Manitouwadge section of northwestern Ontario where impressive deposits of copper-zinc-silver ore have been disclosed.

NOVA SCOTIA—National Gypsum Company of Buffalo, New York, estimates that its \$6,000,000 gypsum development mine program will be ready for full-scale quarrying operations by the spring of 1955.

OTTAWA, CANADA—The Canadian government has signed a contract to buy uranium from the Pronto Uranium Mines in the new Algoma field on the north shore of Lake Huron. A similar agreement is being negotiated with Algom Uranium Mines.

MIDLAND, MICHIGAN—The General Services Administration has signed a contract with the Dow Chemical Company which calls for expansion of the firm's present titanium facility at Midland so that production will reach 1.5 tons per day by January 1, 1956, and 5.0 tons per day by July 1956.

TOOELE, UTAH—The International Smelting & Refining Company has closed its lead-zinc smelter at Tooele for an indefinite period because of lack of material for treatment and poor markets.

PIASSAGUERA, BRAZIL—A 300,000-ton steel mill will be erected near the big iron and steel center in Sao Paulo. Initial investment is estimated at \$150,000,000.

EAGLE MOUNTAIN, CALIFORNIA—Kaiser Steel Corporation's new HMS plant designed to up-grade iron ore has been completed and is now in operation.

CLEVELAND, OHIO—Republic Steel Corporation will spend nearly \$10,000,000 for expansion and improvements of plants and equipment. Largest part of the money will be spent in Ohio's Mahoning Valley.

ORANGE FREE STATE, SOUTH AFRICA—Stilfontein Gold Mining Company will build a £750,000 contact sulphuric acid plant for its uranium operations.

VOLTA REDONDA, BRAZIL—The Brazilian National Steel Company plans to expand its steel mill by 55 percent, to 1,100,000 tons annually. A \$35,000,000 to \$40,000,000 loan from the Export-Import Bank is being sought, with Brazilian capital expected to contribute an equal amount.

TETE DISTRICT, MOZAMBIQUE—Central Mining & Investment Corporation has started development of a copper deposit at Mt. Chidwa. Approximately £40,000 will be spent on surface prospecting and diamond drilling.

ELIZABETHVILLE, BELGIAN CONGO—The Belgian Colonial Council has prohibited exports of strategic minerals to Soviet Russia, her allies, or to countries under her control. Ores, metals, alloys, and byproducts of 16 metals and minerals are included in the embargo list.

HIBBING, MINNESOTA—After stripping more than 20,000,000 cubic yards of overburden in four years, first iron ore has been mined at the Morton mine of the Morton Ore Company (M. A. Hanna Company, Agents).

THE HAGUE, THE NETHERLANDS—A recently signed trade agreement with Russia provides that Russia will export to Holland 40,000 tons of manganese ore; 20,000 tons of chromium ore; and 15,000 tons of iron.

PARAMARIBO, SURINAM—The Surinam Bauxite Company shipped 2,529,036 metric tons of bauxite to the United States during 1953, thus supplying 40 percent of total U.S. bauxite consumption.

KITWE, NORTHERN RHODESIA—Underground development at Mifulira and N'kana copper mines has been reduced to save fuel because of a coal shortage. Full production has not yet been affected but may be if the situation does not improve.

Phelps Dodge Dedicates Lavender Pit Mine-Mill

The nation's third post-Korean copper project—and the largest of the three—has gone into production with the official dedication of the Lavender open-pit mine and plants of Phelps Dodge Corporation at Bisbee, Arizona on August 7. Last fall Anaconda Copper Mining Company's Yerington, Nevada project began producing at the rate of 33,000 tons annually, and in May of this year the American Smelting and Refining Company brought its Silver Bell, Arizona mine into full operation at 18,000 tons annually. After four years of work and the removal of 45,000,000 tons of overburden, 35,000 tons of copper per year will now be produced at the Phelps Dodge \$25,000,000 project.

At least 25,000,000 tons of overburden still remain to be stripped. The pit is more than two-thirds of a mile long, and about one-half mile wide. Its productive life is estimated at 12 years.

The ore will be mined in benches, trucked to the new crushing plant at the edge of the pit, then removed by conveyor belt to the concentrating plant. Concentrate will be shipped by rail to the company's smelter at Douglas, and then sent to the electrolytic copper refinery at El Paso, Texas.

The pit was named for the late Harrison M. Lavender, former manager of Phelps Dodge operations at Bisbee.

Mozambique Copper Development Underway

The Central Mining & Investment Corporation of Johannesburg, South Africa has started development of a copper deposit at Mt. Chidwa in the Tzzipiri area at Casula, Tete district, Mozambique. The property consists of three base mineral claims owned by an Italian prospector, Francisco Gibelino, which have now been optioned by the firm. Approximately £40,000 is to be spent on surface prospecting and diamond drilling.

The mineralization appears to be in banded zones of varying width in coarse crystalline limestone which is embedded in the rocks of the Tete ultra-basic complex. Geological reconnaissance proved encouraging results.

The company has simultaneously applied to the Portuguese government for an exclusive mineral concession covering the surrounding area of approximately 140-mile diameter where other copper and uranium ore showings occur. The group is also investigating various Davidite (uranium ore) occurrences in the wilder Tete area which have been staked by prospectors prior to the prohibition of prospecting for radioactive substances. Davidite is the principal uranium ore in the Tete district.

Spanish Group Acquires Control of Rio Tinto

Development of the Rio Tinto copper and pyrite mines in Huelva province, Spain, will be taken over by a Spanish group which has purchased control of the mines from Rio Tinto Company, Ltd. for about \$25,000,000.

A transfer of all voting and non-voting stock will be made, with Rio Tinto retaining one-third of the total shares in the new Spanish concern.

Although it has not been officially revealed, it is believed that the new firm will be formed by five of the largest banks in Spain. They are the Hispano Americano, Espanol Decredito, Vizcaya, Bilbao, and Urquijo.

American Metal & Canam To Develop Copper Mine

A new company will be formed by American Metal Company, Ltd. of New York and Canam Copper Company, Ltd. of Vancouver, British Columbia, Canada, to develop the Canam copper-molybdenum property 28 miles from Hope, B. C. American Metal's eventual ownership is expected to reach a maximum of 60 percent, and Canam will have a 40 percent interest. Consolidated Mining & Smelting Company of Canada, Ltd. will receive 480,000 shares of Canam as consideration for claims acquired by Canam in 1948.

American Metal is to spend about \$300,000 to develop and explore the property and will eventually spend up to \$5,000,000 for product production at the property, including construction of a mill.

First phase of exploration is already under way. A detailed geological survey will be carried out over the next few months, together with a limited amount of underground exploration. Previous exploration and development work had indicated large tonnages of ore estimated to average 1.4 percent copper, with values in molybdenum, gold, and silver.

Stilfontein To Build Sulphuric Acid Plant

Stilfontein Gold Mining Company, which is already producing uranium oxide, is now about to erect a £750,000 contact sulphuric acid plant in the Klerksdorp district of the Orange Free State, Union of South Africa. Output will be used in the firm's own plant and in other plants in the area. Expenditure will be financed on the same basis as the uranium project, namely, through United States and British loans.

Extensions to Stilfontein's uranium leaching plant are now nearing completion. When in full production, an overall reduction of treatment costs is expected to result. The expanded plant will treat domestic slime residues, as well as those from the mines of Babroscos Mines (Pty.) Ltd., Afrikander Lease Ltd., Ellaton Gold Mining Company, and New Klerksdorp Gold Estates Ltd.

Deepening of the Margaret shaft has been deferred until 1957, and except for this item expected to cost about £675,000, the capital expenditure program will be largely completed this year. This program has included advancement of surplus development work to build up

a three-year milling reserve of ore; thereafter, development will be continued to maintain this level.

Bureau Steps Up Research On Zirconium Production

Intensified research on the production of zirconium, corrosive-resistant metal used in atomic-energy work, is being conducted by the U. S. Bureau of Mines. Almost as strong as steel, but somewhat lighter, metallic zirconium has high resistance to corrosion and a melting point of 3,350° F. These properties, and the fact that it does not absorb and thus waste neutrons needed to sustain a chain reaction, have made it valuable in the work of the United States Atomic Energy Commission.

For atomic energy purposes, zirconium must be free of hafnium, a metallic element closely associated with zircon and baddeleyite. While seeking a means of producing hafnium-free zirconium, the Bureau of Mines developed a method of obtaining hafnium as a ductile metal, in amounts large enough for experimental applications. It has since been discovered that hafnium is also a useful metal in the atomic energy field, and the U. S. Bureau of Mines is now producing over 6,000 pounds a year in conjunction with its zirconium operations.

How Australian Tax Laws Aid Uranium Exploration

Under Australian law, profits, if any, from all uranium mining are exempt from all Australian taxes provided that at least 75 percent of the company's voting power is held by Australian residents. This means that foreign companies must register local companies to compete on equal terms with Australian firms.

Rio Tinto Co. Ltd., a British company with extensive mines in Spain and elsewhere, was the first foreign company to start explorations for uranium. However, at least two United States companies have indicated prospecting interest. Rio Tinto is interested in the Northern Territory where many strikes have been reported (See MINING WORLD, May 1954, page 59) and where open-pit mining is to be carried out at Rum Jungle because of underground problems caused by the heavy nature of the ground.

Gulf Sulphur Builds New Plant Near Vera Cruz

A \$2,500,000 plant is being erected by Gulf Sulphur Corporation near Minatitlan on the Isthmus of Tehuantepec, state of Vera Cruz, Mexico. Another \$1,500,000 will be spent to construct housing and other facilities, and to drill sulphur production wells.

The plant, which will use the Frasch process, is to be completed by May 1, 1955. It will have a water heating and pumping capacity of 1,000,000 gallons of water per day. Provisions are being made for doubling of plant capacity eventually.

The firm reported discovery of sulphur on its property some time ago, and underground reserves are said to be substantial.

Rhodesian Federation Plans Railway, Power Projects

Two projects which will greatly aid the mining industry of the Federation of Rhodesia and Nyasaland are attracting attention in the three central African territories—a Foreign Operations Administration loan for redevelopment of the Rhodesian railways and a hydro-electric power project for the area.

The railway improvement program has already started, with the signing of a \$10,000,000 (Sterling) loan from the United States government to purchase locomotives and rolling stocks, as well as materials and supplies for the railroad's permanent right of way. The Federation is an important producer of copper, chrome, asbestos, coal, zinc, cobalt, vanadium, manganese, and other strategic metals, and the loan is expected to help develop the transportation system.

The hydro-electric power project may take either of two forms. One plan calls for a \$210,000,000 project on the Zambesi River, on the border of Northern and Southern Rhodesia. Identified as the Kariba Gorge proposal, this centrally located project would yield a larger power potential than the second lower-cost plan, which would be on the Kafue River in Northern Rhodesia. Both projects have been held capable of meeting minimum copper-belt power requirements for Northern Rhodesia, but the Kafue River plan may not be adequate for Southern Rhodesia.

The Anglo-American Corporation of South Africa is quoted as offering financial assistance to the Federation in either of the plans. Before a power decision is made by the Federation government, it is reported that a board of investigation will carefully study the two projects.

Lithium Ore Deposits To Be Opened in Canada

An agreement which should greatly increase production of lithium has been signed by Lithium Corporation of America, Inc. and Quebec Lithium Corporation, a subsidiary of Sullivan Consolidated Mines Ltd.

Under terms of a five-year contract, Lithium Corporation will buy all of the spodumene concentrate to be produced from the mining of 800 tons of ore per day. This concentrate will be processed at Lithium's two chemical plants at St. Louis, Minnesota, and Bessemer City, North Carolina. The latter is being constructed at a cost of \$7,000,000.

Quebec Lithium will immediately start construction of a 1,000-ton-per-day concentrating plant near its ore body 25 miles from Val d'Or, Quebec, Canada. Sinking of a three-compartment shaft has begun, to an initial depth of 550 feet. The firm expects to be in production within a year.

Lithium Corporation also recently acquired a 100 percent interest in the Cat Lake spodumene property of Northern Chemicals Ltd. located about 90 miles northwest of Winnipeg, Manitoba. Although there has been no recent activity on the 51-claim property, limited drilling and surface trenching some years ago disclosed about 600,000 tons averaging 1.4 percent lithia (Li₂O) to a depth of 200 feet.

How to keep crawler parts operating longer

Replacing worn shovel parts is costly ... for example, the sprocket, tumbler and track assembly illustrated, which represents a considerable outlay.

The experience of a large pipeline company operating in the West, provides a good example of maintenance procedures that cut replacement costs and save lost equipment time. Two sets of sprockets, tumblers and tracks are maintained for each backhoe. The spare set is rebuilt and hard-faced on regular shop time. It is ready for instant use when needed. When the track shows signs of slipping, the rebuilt equipment is sent out, worn parts are removed and the spares installed on location.

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Work schedules in the welding department are thus smoothed out, since rebuilding and hard-facing jobs can be used as "time fillers" at the welder's convenience without overtime costs.

Shovel down-time is reduced. Only enough time is lost to pull worn assemblies and substitute the spares. Shovels are immediately put back on the job.

Although no exact record is available, careful observation over a long period of time indicates an almost indefinite increase in service life for these specific parts. The procedure



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Chibuluma Cobalt Plant Scheduled for Rhodesia

Chibuluma Mines, Ltd. will build a cobalt treatment plant at Ndola, Northern Rhodesia, adjacent to the site of Ndola Copper Refineries' electrolytic copper refinery now under construction. The cobalt plant will treat concentrate from the newly developing Chibuluma mine near Kitwe.

Treatment of the cobalt concentrate will be in three stages, each in a separate unit. The first, expected to come into operation in 1956, will be the electric smelting of the concentrate to produce a matte containing cobalt and copper. The second stage, to follow later, will refine the matte to yield cobalt oxide; the final stage in the process will be the reduction of the oxide to metal.

Total cost of the plant is estimated at £500,000. Electric power will be supplied by Rhodesia Congo Border Power Corporation.

Nicaró Contracts Awarded For Plant Expansion

Two United States construction firms having subsidiaries in Havana have been selected to expand the Nicaro nickel plant in Oriente Province of Cuba. The two firms are the Frederick Snare Corporation and Merritt-Chapman & Scott Corporation. Snare built the original metallurgical plant at Nicaro during World War II, and rehabilitated it in 1951-1952 after the plant had been closed for a period following the end of the war.

The plant expansion will increase output by 75 percent, and it will then be producing almost 15 percent of all nickel produced in the Free World. Present monthly output is 2,250,000 pounds of contained nickel in nickel oxide form.

The Nicaro mines are leased from the Freeport Sulphur Corporation by the United States government. The plant is operated for the General Services Administration by the National Lead Company and a Cuban firm, Fomento de Minerales.

The additional work will cost about \$43,000,000. The United States has already invested close to \$60,000,000 in the strategic project.

African Firm Produces Corundum-Sillimanite

Pella Refractory Ores Ltd. has started regular production of massive corundum-sillimanite at Pella near Kakamas in Namaqualand. The output, which amounts to between 400 and 600 tons per month, is being marketed under arrangement by the Vereeniging Brick and Tile Company, Ltd. They will use part of the material in their refractory plant at Vereeniging, but the largest amount will be exported as raw material for the production of refractory bricks.

Present production is derived from extensive boulder beds in which the average sillimanite-corundum boulders weigh from one ton to several tons each. The boulder beds extend over five small dome-shaped hills. The primary deposits consist of narrow and elongated lenticular bodies interbedded with gneisses.

Due to the exceptional hardness and density of the corundum-sillimanite boulders, mud-blasting is used for breaking.

New Jersey Zinc Options Canadian Properties

New Jersey Zinc Company has taken options on the properties of four Canadian mining companies in the Blind River district of the Algoma uranium area of Ontario. Intensive diamond drilling is already underway to delimit the indicated ore bodies.

The four firms are: Big Game Mines Ltd., with 39 claims, 30 of which are in the Algoma area; Gui-Por Uranium Mines and Metals, Ltd., with 74 claims, 31 of which are in the Algoma area; Calder-Bousquet Gold Mines, Ltd., with 85 claims, 40 of which are in the Algoma area; and Moon Lake Uranium Mines, Ltd. for which no similar data has been received.



AFRICA

UNION OF SOUTH AFRICA—A new world shaft-sinking record for all types of shafts was established in June at the No. 2 Merreispruit shaft of Merreispruit Orange Free State Mining Company when an advance of 597 feet was made in the month. This exceeds by 12 feet the previous record of 585 feet achieved in the No. 2 Vlakfontein shaft during May of last year. Both of these records were made possible largely through the use of mechanical grabs of the cactus type.



Hand-Operated Jigs Treat African Chrome

In the photograph above a hand-operated jig is treating eluvial chrome-bearing soil in Southern Rhodesia. Rutala Chrome Mines, Ltd. successfully concentrates eluvial chrome on a small scale by a series of nine of these hand-operated jigs. The material is derived from the soil at the foothills of the Great Dyke. The jig is an adaptation of the Spanish "Balanquino" jig, used on tin alluvials in Spain. On eluvial chrome, an extraction of 1.5 to 2.0 tons of concentrate is obtained in one shift employing two native workers. The chrome concentrates contain about 48 percent Cr_2O_3 . Elsewhere on the Great Dyke, eluvial chrome is being concentrated by the Vanad Mines Ltd. and Rhodesian Mining Enterprises Ltd. in two large flotation plants.



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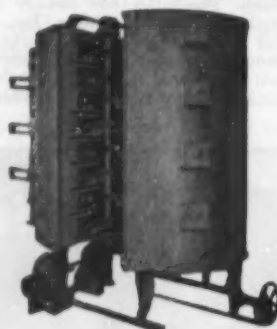
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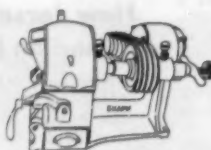
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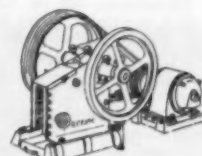
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it will be linked in the program of its associated company. The Klerksdorp company is now proceeding to drill and test the uranium possibilities of the government reef in the farm Elandsheuevel 54 to the northeast. This reef is being developed further west by *Afrikaner Lease* and *Babrosco Mines*, both declared uranium producers.

UGANDA—*Kilembe Copper Ltd.* is proceeding with its work on construction of a 1,400-ton plant. Foundations have already been started for the concentrator and roasting plant. A smelter for blister copper will be built at Jinja. Mine development has been suspended while plant construction is under way. Reserves have been increased to 17,781,000 tons averaging 1.88 percent copper and 0.18 percent cobalt. The project is being financed by *Frobisher, Ltd.*, *Colonial Development Corporation*, and *Uganda Development Corporation*.

EGYPT—A £7,000,000 company has been formed to explore the iron ore deposits of Assuan in Upper Egypt, and to erect a steel works at Helwan. The Egyptian government is participating to the extent of £2,000,000, represented in the value of certain rolling mill machinery purchased some time ago. The German group, *DEMAG*, is subscribing £1,500,000 of the total capital, while the rest is subscribed by the Egyptian National Council for Production and the Bank Misr, with £1,000,000 offered for public subscription.

UNION OF SOUTH AFRICA—The *General Exploration Orange Free State Company* regards the drilling results in the van den Heeverrust area as most promising and warranting further exploration through mining operations at an appropriate time. No mining lease has yet been applied for, and no shafts have yet been sunk. The van den Heeverrust area lays immediately west of the *Freddies* mines, and development results in adjoining leases will be observed with interest. These results have some bearing on the potential value of the Basal Reef horizon and the "A" and "B" Reef zones in the van den Heeverrust area. The area is considered to be sufficient for at least one mine.

FRENCH WEST AFRICA—*MIFERMA* (*Societe des Mines de Fer Mauritanie*) is reported to have concluded the first stage of exploration of its high-grade iron ore by tunnelling and diamond drilling. Sufficient ore was assured to justify plans for building of a railway and start of production. Negotiations on construction of a railway are now in progress. *Frobisher Ltd.* has a 34 percent interest in the mines which are expected to produce 4,000,000 tons per annum.

UNION OF SOUTH AFRICA—A Rhodesian mining group, *Sherwood Starr Gold Mining Company*, is investigating the possibility of participating in chrome mining in South Africa in conjunction with the *Consolidated Chrome Corporation* on their mines on the farm Ruighoek, Rustenburg district, Transvaal. These mines produced a total of 22,000 tons of chrome concentrates, containing from 46 percent to 47 percent Cr_2O_3 , from shallow workings during 1953. The chrome seams on farm Ruighoek are slightly wider than the Southern Rhodesian chrome seams on the Great Dyke, but the chromic oxide content is not of the high metallurgical grade of the average Rhodesian ore.

SEPTEMBER 1954



OCEANIA

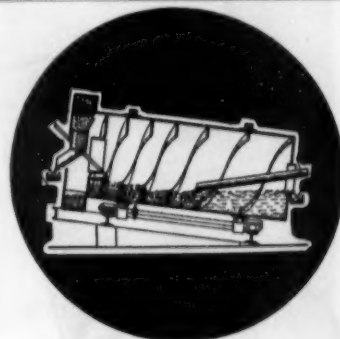
QUEENSLAND—*Mount Isa Mines Ltd.* produced 19,868 tons of blister during the year ended June 30. Current output is at the rate of 25,000 tons annually. In addition to the copper, 35,725 tons of silver-lead bullion and 40,198 tons of zinc concentrate were produced from a total of 1,177,270 tons of ore. The results of the company's first drilling tests

on a uranium lease in the Glowing Hills area were disappointing but further tests are continuing.

PHILIPPINE ISLANDS—*Benguet Exploration Mining Company* is making arrangements to erect a 50-ton cyanide mill to treat its high grade but complex ore in its mine near Camp 6 on the Kennon Road in the Mountain Province. The ore assays nearly one ounce of gold per ton. The tailings, with 30 percent zinc content, will be stored pending a better price for the metal. Paul Schafer is consulting geologist.

QUEENSLAND—*Isa Uranium Syndicate* has been formed by six companies to prospect for uranium in the Mt. Isa-Clon-

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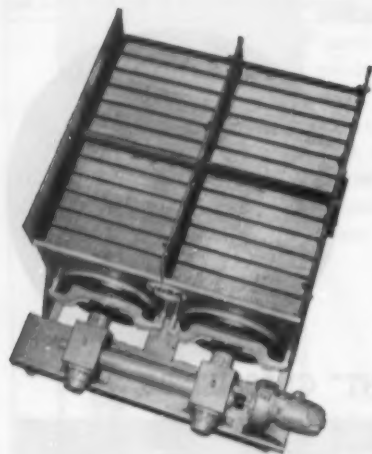
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INTERNATIONAL

curry district. The six firms are: *Consolidated Gold Areas; Wolfram Hill N.L.; Cable Oil Syndicate; Uranium Oxide N.L.; Drilling and Development N.L.; and Ore Banda North N.L.* Also at Cloncurry: *Western Mining Corporation and Gold Mines of Australia Ltd.* will jointly prospect for uranium. Options over leases showing radioactivity have been secured in the Tinboll and Hot Rocks areas. The former contains copper and uranium minerals and the eastern end of a 1,200-foot lode gives radiometric counts averaging eight to ten times the background extending over a width nearly 30 feet. In the Hot Rocks section, radioactivity occurs in an outcropping band of slates which has been traced for over a mile.

NEW GUINEA—Mandated *Alluvials N.L.* at Port Moresby will give an option over the company's Papuan assets to a director, J. C. Kennett. The company holds an area that has been worked sporadically for many years. There is a substantial tonnage (4,000,000) of cupriferous pyrite and pyrrhotite at Laloki but to date there has been no success in attempting to recover copper economically. Although values are as high as 4.0 percent Cu, when a concentrate is made grade is very low or else recovery must be unduly sacrificed (i.e., separation of iron and copper minerals has not been proved possible.)

PHILIPPINE ISLANDS—The *Suriago* gold mine of the *Suriago Consolidated Mining Company* in Mindanao was out of production for over a month when an underground fire below the 500 level necessitated flooding of the mine to extinguish the fire and get rid of dangerous carbon monoxide gas.

NORTHERN TERRITORY—*Brock's Creek Uranium N.L.* at Brock's Creek, the first private company to send uranium ore to the Rum Jungle plant, has a vertical shaft down to 90 feet. Two ore occurrences, one 400 feet from the shaft and the other 45 feet further west, show torbernite. A further discovery is reported on one of the company's leases, torbernite and copper mineralization outcropping over a length of 80 feet. In the Adelaide River area, *Uranium Development and Prospecting N.L.* reports that rich torbernite ore has been located 1,300 feet southeast of the main shaft. Delivery of a 50-ton sample to Rum Jungle treatment plant has been completed.

TASMANIA—*Mount Lyell Mining and Railway Company Ltd.* at Queenstown reports a small increase in tonnage and copper production for the nine months ended June 30. Ore treated was 1,155,937 tons; blister output was 7,294 tons. Almost all of the production continues to come from the West Lyell open cut where ore grade is less than 0.7 percent Cu and overburden ratio 2.8 to 1.

NEW GUINEA—For the 12-month period ended May 31, 1954, *Bulolo Gold Dredging Ltd.* reports that 13,909,900 cubic yards were dredged to recover 69,091 ounces of fine gold. During the same period of last year 16,901,200 yards were dredged to recover 115,745 ounces of fine gold.

PHILIPPINE ISLANDS—Small Filipino mineral producers and exporters representing 27 mining and development firms who "deplore what they call the shy and timid attitude of private Filipino capital towards their industry" have organized themselves into an association

in an effort to contribute their resources towards the stabilization of the Philippine mining industry and the implementation of the country's economic development program. The member firms of the Filipino Mineral Producers' Association are *Ancheta Mining, Associated Chromite, Badillo Mining, Barcanor Mines, Bonanza Chromite, Cabata Mining, Candelaria Chromite, Concepcion Mining, Explosive Engineering, Fatima Mining, Filipinas Mining, Hinapulan Mining, Jiacong Manganese, Kayan Copper, Minlaw Mining Association, Northern Manganese, Oriental Chromite, Panan Mining, Robles Mining, Roubon Marble, Santa Cruz Consolidated Mining, Sulu Minerals, Suyo-Marapudo Mining, Tarmayan Manganese, Vilma Chromite, Visayan Mining, and Zambales Chromite.*



INDIA—Central Provinces *Manganese Ore Company's* new heavy media separation plant which was completed earlier this year at the *Dongri Buzurg* mine is not operating at full capacity because of a water shortage. The water table of the district is at present unusually low because of a succession of poor monsoons in recent years. However this season's rains are expected shortly, enabling the plant to go into full production.

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SOUTH KOREA—The government-owned *Tahehan Tungsten Corporation* has resumed mining of tungsten after a shut-down in March. The mines were closed when the contract with the United States was fulfilled, and the South Korean government was unable to find another purchaser for its ores. It is reported that the corporation's mines will only produce at 20 percent of capacity or about 220 tons per month.

THAILAND—The newly rehabilitated dredge of *Tongkah Harbor Tin Dredging Ltd.* started working at Ronpibon in June. This 13-cubic-foot bucket dredge is equipped with three 670-horsepower Crossley Diesel engines.

MALAYA—A post-war production record was set by Malayan tin mines in the quarter from April through June 1954 with an output of 15,172 tons. Production for the first half of this year was 29,534 tons of tin-in-concentrate, which is 589 tons higher than the old post-war record of 1950. The record was achieved with fewer mines in operation. Only 518 gravel pump mines were working in June compared with 591 in October of last year. It is believed that the post-war high was brought about by the possibility of tin restrictions. Miners boosted their production to show high production figures on the theory that quotas for mines under the new tin restrictions will be allotted on this year's production figures.

INDIA—More details on the country's new steel plant to be erected at Rourkela are being made available. A preliminary report prepared by the German consultants, *Krupps-Demag*, has been accepted by government officials. It specifies a plant with an initial capacity of 500,000 tons, and recommends the steel process which is now standard practice in Germany and which, it is claimed, will yield 8 percent more steel with the same amount of raw materials than the processes now used in India. Work will begin on the preparation of detailed designs and specifications. This will be done in Germany, but a group of 18 Indian engineers will be sent abroad to participate as trainees. This phase is to be completed in January 1955, and bids for plant and equipment will be called for shortly thereafter. Instead of building a 25,000-kw power house, it has been decided that the Hindustan Steel Board will buy power from the Kirakud River valley project and have only a 7,500-kw standby power station. Bureau of Mines' geologists are now investigating the *Taldih* ore mines from which the plant will draw its iron supplies. They will look into the limestone and dolomite supply situation later.

THAILAND—Thailand has agreed to sell 2,400 tons of tin ore to the United States at prevailing Singapore prices. Only conditions of the contract are that the amount sold must not exceed one-third of Thailand's total tin production during the current calendar year, and that the transaction be completed between August 1, 1954 and March 31, 1955.

MALAYA—A heavily guarded prospecting group has moved into the jungle in Johore State to investigate what is believed to be a "hill of iron" in a remote part of the country. Emergency conditions prevented undertaking of the project last year. The iron area is in the Bukit Kepong district between the Muar and Batu Pahat rivers, not far from Labis.

SEPTEMBER 1954



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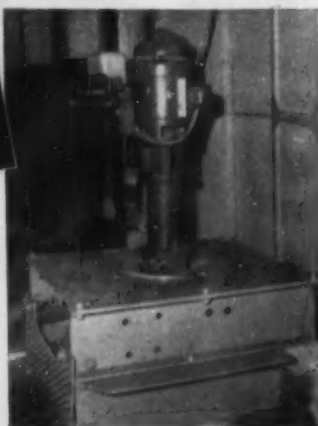
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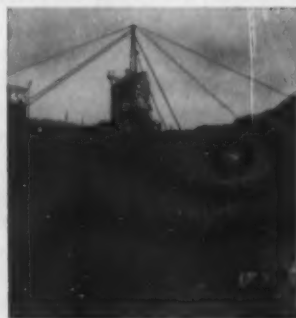
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INTERNATIONAL

Before the war the Japanese are reported to have obtained about 10,000,000 tons of iron ore from the Sri Medan mines in the Batu Pahat area, but this deposit was virtually worked out by the time the war started. The Japanese were known to be interested in the Bukit Kepong area where they were rumored to have found substantial deposits.

THAILAND—*Siamese Tin Syndicate Ltd.* has applied for mining leases on two sections of the Bangnon property, adjacent to the township of Renong and 10 miles from Ngow. The firm has had an option on the area since January of this year. One section is estimated to contain 24,500,000 cubic yards averaging 0.57 pound per cubic yard of tin, and the other section is reputed to contain 8,000,000 cubic yards averaging approximately 0.45 pound per cubic yard. The company has also acquired another 541-acre property during the last few months. The purchase price was £3,000 and 102 acres of that property laying contiguous to the *Bangrin Tin Dredging Company's* leases, are estimated to contain 7,943,000 cubic yards averaging 0.44 pound per cubic yard. Siamese Tin holds all of the capital stock of Bangrin Tin.

JAPAN—*Mitsubishi Metal Mining Company*, *Furukawa Electric Industry Company*, and *Honjo Zinc Industry Company* are reported to be forming a new company which will produce magnesium in Japan. Honjo has been experimenting with production of magnesium from domestic dolomite. Chief obstacles are said to be the high initial outlay, and the electric power shortage.

INDIA—At a special meeting of Indian and North Indian states, the government has decided to produce a co-ordinated plan for development of mineral resources within the country. Non-ferrous metals and scarce minerals will be given top priority in the survey program. Immediate work will start on copper ore, zinc, lead, silver, gold, pyrite, tin, silliminite, and magnesite development.



EUROPE

ITALY—The recent discovery of ore bodies in the *Vallimperina* pyrite mine near Agordo (province of Belluno) has extended the operating life of the mine. One of the oldest pyrite mines in Italy, its deposit had been practically exhausted and operations were to be discontinued in the current year, until exploration work revealed the additional ore. It is now thought that the mine may have at least five years more of operating life.

WALES—*Halkyn District United Mines* in Flintshire concentrated on development work at its lead-zinc property during the year. The firm has resumed driving of its deep or sea-level adit which is the drainage as well as the main haulage way. It is reported that this main crosscut has intersected an 18-inch lode with good lead and zinc values. In the company's annual report published June 1 production of lead concentrate totaled 2,676 tons and zinc concentrate 456 tons. Both show an increase over figures of



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[World Mining Section—63]

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YUGOSLAVIA—The Bor copper mines in East Serbia and the Majdanpek pyrite and copper mines 40 kilometers north of Bor are being reconstructed and developed under one management. An \$18,000,000 loan from the United States and France is available for this work. The flotation plant at Bor is being enlarged from 4,000 tons per day to 7,000 tons per day. Blast furnace smelting will be abandoned. Standard reverberatory furnaces or "finish" furnaces (suspension roasting and reduction) or wet processes are under consideration. Sulphuric acid made from gases will be transported by rail to Prahovo on the Danube River and then to new chemical factories.

AUSTRIA—The Bleiberg *Bergwerks Union* is constructing the first Austrian zinc refining plant at Gailitz. Planned for an annual capacity of 10,000 metric tons, the plant will be ready for operation in 1955 and will put an end to the export of Austrian zinc ores to Germany. At present, the ore is sent to West Germany for processing and reshipped to Austria in refined form.

BULGARIA—The new Five Year Plan for 1953-1957 demands an increase of 2,000 percent in proved iron ore reserves and 600 percent increase in known deposits of copper ore. On the production side, 290 percent more iron ore is to be delivered to the only mill, and 340 percent more copper ore made ready for "out-of-country" processing. The Geological Institute of Sofia received orders to prospect for chromite, bauxite, phosphorus, wolfram, nickel, molybdenum, tin, and magnesium. So far, no trace of these minerals has been established in Bulgarian territory.

CORNWALL—It is reported that *Wheal Edward* mine on the cliffs near Land's End may be reopened by a private company for uranium sampling. In other parts of western England, the Geological Survey has been conducting exploration work and has come to the conclusion that there is insufficient uranium to justify extensive exploration or the erection of a suitable treatment plant.

FRANCE—French iron ore output in May totaled 3,451,800 tons, compared with 3,490,000 tons in April. Exports dropped to 886,600 tons from the previous monthly total of 901,100. The decrease was attributed to the lower number of working days.

ITALY—A bill presently before the Parliament would authorize the Ministry for Industry and Trade to extend contributions to a total of 150,000,000 lire to marginal Sicilian sulphur mines. Covered by the bill would be those mines which have low-grade ore and whose production costs therefore are much higher than the average (up to 55,000 lire per tons, or about \$90, compared with 40,000 lire for the majority of the mines). The money would be allocated to help these mines introduce more modern techniques, such as flotation, in order to cut down their production costs and thus improve Italy's chances of meeting competition on the international market.

YUGOSLAVIA—Metal production this year has dropped considerably, handicapped in part by the winter drought which caused a great power shortage. February showed the worst decline, with metal production dropping to one third

of last year's average. Production from January through May 1954 has been as follows: refined lead 24,863 tons; electrolytic copper 9,586 tons; crude zinc 5,799 tons; aluminum ingots 1,122 tons; regulus antimony 581 tons; silver 35 tons; mercury 214 tons. The zinc smelters at Celje, Slovenia have had a further mishap. In June they were flooded so that production was delayed for half of a month. Lead and zinc production for 1954 is thus expected to lag behind that of 1953.

POLAND—Experts in Warsaw reportedly believe that Poland can supply up to 40 percent of its iron requirements from domestic mines. This would be possible if the Czenstochowa ore area were to be fully developed. The present level of domestic deliveries to the processing plants (as compared with the total processed volume) stands at about 26 percent.

YUGOSLAVIA—The new alumina and aluminum plants at Kidricebo near Ptuj (Slovenia) are almost completed. Building started in 1942 but was later delayed for several years. One plant has a capacity of 45,000 tons of alumina per year, and the other will produce, when completed, 30,000 tons of aluminum per year. (15,000 tons of alumina from other plants will also be processed.) This alumina plant is the second one to use towers for the decomposition of bauxite. The process was first carried out at the VAW plant at Lunen, Westfalia, from 1940 to 1944. Also the sintering process, using sodium carbonate is included in this alumina plant. The aluminum plant is now in partial production. An additional 160 pots will be added later increasing production as more power is available.

THE NETHERLANDS—A bill has been proposed in Parliament regarding development of the recently discovered salt deposit near Delfzyl in the province of Groningen. A total sum of 51,000,000 guilders is concerned in the project. Meanwhile, 12,000,000 guilders will be provided by the *Royal Dutch Salt Company*, 4,000,000 guilders by the state coal mines in Limburg, 500,000 guilders by the *Mekog* and *Ketten* companies together, and 21,000,000 will be obtained through a state-guaranteed loan. The salt deposit is estimated to contain 50,000,000 tons of salt; a production of 170,000 tons of soda is planned annually with much of it to be exported since the country's consumption amounts to only 80,000 tons annually. Production is scheduled to begin January 1, 1958.



NORTH AMERICA

ONTARIO—*Quebec Tantalum and Lithium Mining Company Ltd.* has staked two properties in the Nemegos area of northern Ontario. One holding of 71 claims is located in Lacknor township northeast of the *Multi-Minerals Ltd.* ground where a large magnetite-apatite ore body containing many promising columbium values and associated radioactivity is under development. The other property (78 claims) is located in McNaughton and Halsey townships adjoining the southwest boundary of the



Yugoslavia Increasing Its Zinc Production

This aerial picture shows the Zvečan, Yugoslavia concentration plant and refineries which treat ore from the Trepcia mine. This mine is the largest lead producer in Europe and one of the most important zinc producers. The picture shows the flotation mill, the refinery building, the gas-generator installations, the Newman hearth plant and the 400-foot-high roaster gas stack. Refined lead is produced at this location. Electrolytic zinc will be produced at a new plant at Sabac which will have an initial capacity of 12,000 tons of zinc and 40 tons of cadmium per year. Provisions have been made to expand zinc output at a later date to 18,000 tons per year. A new sulphuric acid plant with a capacity of 120 tons of acid daily has been in operation at Sabac for over a year. Pyrite is burned at the plant as a source of sulphur.



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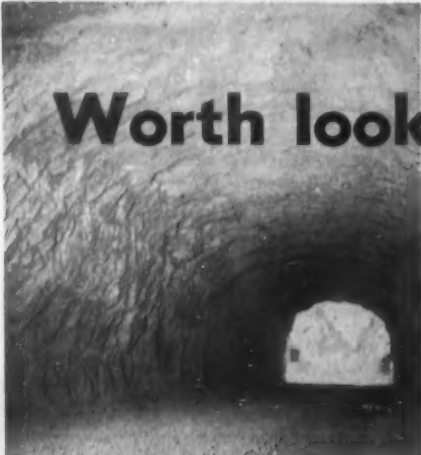


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INTERNATIONAL

Ontario Rare Metals Ltd.'s Sunrise group of 26 claims adjoining the Multi-Minerals acreage. Prospecting combined with a magnetometer survey of the Quebec Tantalum property is progressing favorably.

BRITISH COLUMBIA—Northwest Explorations, Ltd. is exploring two groups of mining claims in the Cranbrook area and has stacked 200 claims in the Fort Steele mining division. One crew is diamond drilling on Pitt Creek and another crew is working in the Cherry Creek vicinity. The firm is a subsidiary of Kennecott Copper Corporation.

ONTARIO—Calder Bousquet Gold Mines Ltd. has started diamond drilling on its seven-claim property located about 12 miles north of its main Beaverlodge holdings. Previous trenching and drilling had produced encouraging results and this new drilling will explore the ore potentialities of these occurrences. Recently Calder completed arrangements with the New Jersey Zinc Exploration Company for exploration of Calder's "Middle Belt" Algoma Camp property.

ALASKA—Several reports and maps of Alaskan mining districts have been released by Secretary of the Interior Douglas McKay. One describes the Kathleen-Margaret copper prospect on the upper Maclaren River. Copper-bearing quartz veins were discovered there by E. O. Albertson and F. S. Pettyjohn and examined by geologists of the Alaska Territorial Department of Mines and the Geological Survey. Another report describes the geology and ore deposits of the Willow Creek Mining District in southern Alaska which produces almost \$18,000,000 or about 5 percent of Alaska's lode gold output. Two small magnetite deposits near the head of Tuxedni Bay on the west side of Cook Inlet are discussed in another report based on a brief examination by the U.S.G.S. One massive lens of magnetite and garnet is exposed in the sea cliff at the western extremity of the island. Where it outcrops the deposit is estimated to contain about 75 percent magnetite. The other deposit on the northeast shore of the island is estimated to contain about 10 to 20 percent magnetite.

QUEBEC—Battelle Memorial Institute of Columbus, Ohio has been retained by Fenimore Iron Mines Ltd. to estimate the probable cost of an initial plant at Ungava Bay, capable of producing 1,000,000 tons of ore annually. The Institute will also determine the concentration characteristics of the ore in Fenimore's two Ungava concessions. Of an estimated 1,000,000,000 tons of iron-bearing material, about 200,000,000 mineable by open-pit methods are reported to be in the North Finger Lake area about seven miles from tidewater. The deposit is said to be a mixture of magnetite, hematite, and gangue, averaging 30 percent iron.

BRITISH COLUMBIA — Bralorne Mines, Ltd. in the Bridge River district is making satisfactory progress in sinking its Queen shaft. The shaft is nearly 500 feet below the 26th level. Stations have been cut on the 27, 28, and 29 levels, and a pocket cut on the 28 level. Cross-cutting on the 28 level found good values in the "79" vein across a width of four feet. Drifting on the same vein on the 22 and 26 levels has developed narrow ore shoots. North of Kamloops, diamond drilling has disclosed a second vein of silver-lead-zinc ore at the property of

Allied Mines, Ltd. An 800-foot tunnel is planned. Edward H. Kellner is president.

LABRADOR—Technical Mine Consultants Ltd. has staked a group of 1,000 claims between the holdings of the *Atlantic Iron Ore Company* and the *International Iron Ore Company* in the Labrador "iron trough." The property has been turned over to a newly formed company, *Oceanic Iron Ores of Canada, Ltd.* Preliminary prospecting and sampling has indicated many millions of tons of outcropping hematite-magnetite ore containing 38 percent iron. A crew under the direction of Dr. W. L. C. Greer, iron ore mining consultant, is already at the property.

QUEBEC—Goldfields Uranium Mines Ltd. has started surface exploration work on its recently acquired 57-claim copper-gold prospect in the Evans Lake sector of eastern Quebec. The property adjoins the *Preston East Dome* claim on the west. The staking in this district was prompted by the large copper-gold surface discoveries made by *Noranda Mines Ltd.* Goldfields' latest drilling results from its *Kaput-Betty Lake* area discovery on its main Beaverlodge, Ontario property continue to indicate the presence of radioactive ore-bearing structures. Drilling is continuing.

ALASKA—Canadian Aero Service Ltd. of Canada made an airborne magnetometer survey of the *Admiralty-Alaska* nickel-copper deposit and vicinity near Funtier Bay recently. The mineralization of the Funtier Bay property is highly magnetic and the aero magnetic map to be produced from this work is expected to assist in future development of the area. Canadian Aero Service also made an aerial survey of the Port Snettisham magnetite deposit.

BRITISH COLUMBIA—Deer Horn Mines Ltd. is establishing a winter camp at its silver-gold property in the Kitimat area so that underground work can be carried on during the winter season. Equipment, supplies, and a mining plant have been moved onto the property and a road has been cleared to the adit portal site. Initial underground work will start this fall.

QUEBEC—Crane Company is diamond drilling at a titanium prospect in Quebec where the company holds several groups of claims.

ONTARIO—Noranda Mines Ltd. and The Mining Corporation of Canada Ltd. are participating in the purchase of 744,993 shares each of *Geco Mines Ltd.* stock and in the supplying of any additional funds required to bring the Geco property into production. Geco has a 44-claim copper-zinc prospect in the Manitouwadge area. Associated with Noranda in the venture are *Waite Amulet Mines, Ltd.*; *Anglo-Huronian, Ltd.*; *Hallnor Mines, Ltd.*; *Pamour Porcupine Mines Ltd.*; and *Aunor Gold Mines Ltd.* Associated with The Mining Corporation in the venture are *Queumont Mining Corporation* and *Normetal Mining Corporation*.

BRITISH COLUMBIA—Uranium investigation is increasing in the Foghorn Creek area of the Kamloops mining district. Diamond drilling by *Rexspar Uranium and Development Company* has outlined two uranium-bearing zones with indicated tonnages of 150,000 tons each, and underground work is under way. A new firm, *Kelspar Uranium Developers, Ltd.* of Calgary has started diamond

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* Pulley shell of this revolutionary head pulley rotates around electric motor and reduction gears, which are held stationary by torque arm attached to conveyor frame. Quickly in-

stalled — requires no more room than idler pulley. All moving parts protected against weather, grit, dirt. Diameters $10\frac{1}{2}$ " to 56". $1/3$ to 125 hp. for voltages to 2300. Job proved.

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Pulley and Sprocket Dept.

70

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Flexipipe is now available with Rope Seam Suspension at no additional cost. The newest, best, quickest suspension . . . eliminates special accessories and suspension wires . . . all you need is a nail. It equalizes strain on the tubing.

Flexipipe is efficient, serviceable, economical. Jute and heavy-duty grades available in a variety of lengths and diameters to meet your requirements.

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ready for
diamond drilling

anywhere

1. Jeep mounted, self-contained unit.
2. Power take-off drive (for Jeep or small truck).
3. 3 speed transmission.
4. Cargo type cathead winch.
5. Water swivel.
6. Built in water pump with separate clutch.



7. Acker exclusive screw feed design.
8. Rugged steel chuck with extra long jaws.
9. Two stabilizing jacks.
10. Tubular steel derrick.
11. Uses any standard diamond drill tools and bits.
12. Maximum depth 500 feet—E size tools.

The New Model TS Acker Screw Feed Diamond Bit Drill

Here's the latest Acker Time-saving screw feed diamond drill. Ready for action anywhere a Jeep can go. The entire unit is self-contained with power take-off directly from a Jeep or small truck. The extreme portability of Jeep mounting speeds diamond drilling over the roughest terrain.

You save valuable setting up and dismantling time and labor because this Acker is ready to drill the minute it arrives.

Think of ACKER for diamond core drills and accessories.

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INTERNATIONAL

drilling on adjoining ground. Kam-Spar Uranium Syndicate, Allied Uranium Syndicate, and Birch Island Uranium Syndicate have been organized to develop other holdings in the area. Edward H. Kellner of Vancouver, mining operator and prospector, is president of Kelspar Uranium and organized the other new firms with Samuel Ciglan of Toronto. Mr. Kellner was one of the discoverers of Rexspar.

QUEBEC—Conecho Mines Ltd. has staked a 39-claim property in the newly developing Evans Lake section of eastern Quebec. This section contains large claim groups recently staked by Noranda Mines, McIntyre Porcupine Gold Mines, and Preston East Dome Mines Ltd. The activity resulted from copper-gold discoveries made by Noranda. Conecho has started prospecting.

ONTARIO—The Marmoraton Company, a subsidiary of Bethlehem Steel Company, expects to begin first open-pit mining at Marmora this fall. The last of the massive limestone capping overlaying the ore body will be removed then. The iron ore will be shipped across Lake Ontario to Bethlehem's Lackawanna plant near Buffalo.

BRITISH COLUMBIA—Columbia Copperfields, Ltd. has started work at its copper-gold-silver mine in the old Phoenix copper camp, four miles from Greenwood. It is planned to put the ore through the firm's 80-ton mill at Greenwood. At the old Homestake mine 57 miles north of Kamloops, Allied Mines Ltd. has a dozen men diamond drilling, blocking out silver-lead-zinc-copper ore, and completing a 100-ton mill.



LATIN AMERICA

BRAZIL—The country's first uranium pilot plant will be built in the Pocos de Caldas region of the State of Minas Gerais. Its major purpose will be for the training of nuclear experts; however, it will also be designed for production of sufficient quantities of uranium of "nuclear purity" to permit construction of experimental nuclear reactors. Part of the country's atomic energy program includes training of physicists in cyclotron techniques at the atomic energy center now being constructed in Niteroi. Mineral surveys for radioactive materials are being carried on by air; some of the most promising sources are said to be located in the state of Minas Gerais where the pilot plant is to be erected.

MEXICO—Compania Minera de Santa Rosalia has been organized by governmental and private interests to reopen the El Boleo copper mines at Santa Rosalia, Baja California recently abandoned by the French-owned Cia. Minera de El Boleo, S.A. as an unprofitable operation.

BRAZIL—The Brazilian National Steel Company is planning a 55 percent increase in its steel ingot making capacity—to 1,100,000 metric tons annually. Negotiations are reported to be underway with the Export-Import Bank for a loan of \$35,000,000 to \$40,000,000. The sum would be matched with a similar amount from Brazilian sources. This would be the

second expansion program for the Volta Redonda mill. Its original capacity of 360,000 metric tons was increased to 710,000 earlier this year.

MEXICO—This year Mexico will export to the United States about 203,000 tons of zinc, 198,000 tons of lead, and 48,000 tons of copper, according to the estimates of the Mexican Federation of Mining Associations. Based upon sales during the first six months of this year, and the outlook for the second half, the figures amount to about 90 percent of Mexico's entire zinc and lead production, as well as 80 percent of its copper. Despite this high estimate, the federation's spokesmen predict that local mining will continue to suffer from a "crisis" as long as the world market remains in its present condition and domestic taxes remain on their currently high level. The federation has asked the Mexican Finance Ministry to reduce the export tax on gold, silver, lead, copper, zinc, and tungsten, while the Mexican Mining Chamber is calling for reduced taxes, encouragement of foreign and domestic capital investments, and construction of roads and other means of transportation from mines to smelters.

ARGENTINA—There is continued improvement in the experimental electrolytic copper refinery built by S. A. *Electroquímica Mendocina* in San Jose de Guaymallen, Mendoza province, at a cost of \$8,000,000. Present output is 10 tons monthly, but plans call for an increase to four tons daily with the installation of a flotation process. The operation consists of 180 cells in series; also a grinding plant, roasting plant with rotary kiln, acid plant with Glover tower, a leaching plant, and a thickener. The ore for the project (malachite, chalcopryite, and azurite) is mined in the *Salamanca* mine, 120 kilometers from Mendoza City. Mine production has been about 6,000 tons yearly. The use of mechanical equipment, electric lighting, and other improvements place this mine among the advanced mining operations in the country.

VENEZUELA—*Mines de Ore de El Callao*, a local company formed last year,

has reactivated the famous *El Callao* mines in the state of Bolivar. The company has the full support of the Venezuelan government Ministerio de Minas, and has been producing about 120 kilos of gold bullion per month from approximately 10,700 tons of ore per month. The company encourages small mine operators and purchases their production at its mill site, which has resulted in considerable activity in this district with the subsequent possibilities of greater production and new mine discoveries.

COLOMBIA—The amalgamation of *Nechi Consolidated Dredging Ltd.* with *Pato Consolidated Gold Dredging Ltd.* has increased the workable gravel reserves by about 250,000,000 cubic yards. Total reserves recalculated as of December 31, were 534,407,800 cubic yards. For the four months of the current year, 8,371,300 cubic yards of gravel were dredged for a recovery of 60,971 ounces of gold, valued at \$2,133,985.00. A similar rate of production is expected to be maintained for the balance of the year. Since the amalgamation, facilities are being centralized at Bagre and operations integrated in other respects which should be reflected in future operating costs.

VENEZUELA—Diamond production has shown a remarkable increase during the past four years. Over one-half of the total production came from the first mining district, San Pedro de las Bocas-Urman, where most of the nomadic free diggers have moved since 1951. Production has been as follows: 1949, 68,749 carats; 1950, 60,389; 1951, 63,226; 1952, 92,290; 1953, 84,789.

MEXICO—Uranium mining in the states of Chihuahua and Oaxaca has been suspended by order of President Adolfo Ruiz Cortines. Production of this metal in Mexico started 25 years ago for the manufacture of so-called "uranium belts," then considered by some as a treatment for cancer, and was resumed two years ago for industrial purposes. The government's plans for the mines have not been revealed. The affected properties include the nation's pioneer uranium mine at Cuchillo Parade in Chihuahua.

CHILE—The Central Bank of Chile has approved a barter arrangement for the sale of copper to Western Germany in exchange for \$4,000,000 worth of agricultural tractors and \$500,000 worth of trucks.

MEXICO—The Ministry of Finance reports that national tax refunds have been granted to *Cananea Consolidated Copper Company*, a subsidiary of *Anaconda Copper Mining Company*, to encourage mining of low-grade ore. The tax relief was considered necessary to enable Cananea to continue operation. The basis of the rebate is as follows: refund of 75 percent of the usual imposts on ore yielding less than \$3.00 per ton; this does not apply to values of more than \$3 per ton.

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A result of more than two years engineering and development, the DS-234 offers 8 important new features—including new and completely revised circuitry, improved heat insulation and assured accuracy using a 1" x 1" sodium iodide crystal and RCA #6199 photo-multiplier tube. Sensitivity as low as .025 MR/HR. Guaranteed.



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The widely used, field tested Nuclimeter DR-290 has a sensitivity as low as .020 MR/HR. It is not affected by heat and is available with a detachable meter and 10' of cable for airborne use. Simple and exceptionally low cost operation for units of this type. Rugged, compact and lightweight.

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MINING OPERATORS

USE McCarthy Drills



Heavy- Rugged Powerful

AT Bessemer Limestone & Cement Co., Bessemer, Pa., one McCarthy unit (above) averages 90 ft. per hour, drilling through hard blue shale and sand rock 34 ft. deep. Blast holes are drilled on 18-ft. centers. Two men handle the whole job, including setup and moving. McCarthy drills operate with gasoline, diesel or electric power units . . . on all types of mounts. McCarthy "money-savers" can work for you. See your nearby distributor or write Salem Tool direct for further information.



THE SALEM TOOL CO.
801 S. ELLSWORTH AVE.
SALEM, OHIO · U.S.A.

U.S.A. Metal & Mineral Prices

METALS

August 16, 1954

COPPER:	Electrolytic, Delivered F.o.b. cars, Valley basis	30.00¢
	Lake, Delivered, destinations, U.S.A.	30.00¢
	Foreign Copper, Valley basis	29.75-30.00¢
LEAD:	Common Grade, New York	14.00¢
	Tri-State Concentrates, lig, flotation 80% lead, per ton, Eagle-Picher ..	\$169.85
ZINC:	Prime Western; F.o.b. E. St. Louis	11.00¢
	Prime Western; Delivered, New York	11.50¢
	Tri-State Concentrate, 60% zinc, per ton	\$64.00
	Primary 30 Pound Ingots (99% plus), F.o.b. shipping points	22.20¢
ALUMINUM:	Long Star Brand, F.o.b. Laredo, in bulk	29.00¢
ANTIMONY:	(in ton lots) price per pound	\$2.25
BISMUTH:	Sticks and bars, 1 to 5 ton lots (Price per pound)	\$1.70
CADMIUM:	97-99%, keg of 550 pounds (Price per pound)	\$2.60
COBALT:	Powder	\$75.00
COLUMBIUM:	Ingots (99.8%), F.o.b. Freeport, Texas	27.75¢
MAGNESIUM:	Flasks, Small lots, New York	\$290.00
MERCURY:	"F" Ingots (5 pounds), F.o.b. refinery, Port Colbourne, Ontario	\$0.01¢
NICKEL:	Grade A Brands, New York (Price per pound) Prompt delivery	\$2.625¢
TIN:	99.3% (Price per pound)	\$4.72
TITANIUM:	United States Treasury price	\$35.00 per ounce
GOLD:	Heavily mined domestic, United States Treasury price	90 1/4¢ per ounce
SILVER:	Foreign Handy & Harman	\$85.25¢ per ounce
PLATINUM:	Per Ounce	\$84.00-\$87.00
ZIRCONIUM:	Sponge, Per Pound	\$4.72

ORES AND CONCENTRATES

BERYLLIUM ORE:	10 to 12% BeO, F.o.b. mine, Colorado	\$47.00 per unit
	Small lot purchases at Custer, S. D., Spruce Pine, N. C., and Franklin, N. H. Visual inspection at \$400.00 per short ton or by assaying at: 8.0 to 8.9% BeO, \$40 per unit; 9.0 to 9.9%, \$45; over 10.0%, \$50.	
CHROME ORE:	F.o.b. railroad cars eastern seaports. Long tons dry weight.	
	African (Rhodesia), 48% Cr ₂ O ₃ , 3 to 1 ratio	\$44.00 \$46.00
	African (Transvaal), 48% Cr ₂ O ₃ , No Ratio	\$31.00-\$32.00
	Turkish, 48% Cr ₂ O ₃ , 3 to 1 chrome-iron ratio	\$50.00
	U. S. Government ore purchase depot Grants Pass, Oregon, base price, lump ore, \$115.00; fines and concentrates \$110.00 for 48% Cr ₂ O ₃ and a 3 to 1 chromium-iron ratio. Premiums for higher grade ore and for a ratio up to 3.5 to 1. Penalties for grades down to 42% Cr ₂ O ₃ .	
COLUMBIUM-TANTALUM ORE:	At United States small lot beryl purchase depots, \$3.40 per pound contained combined pentoxides in 50% ore. Includes 100% bonus.	
IRON ORE:	Lake Superior, Per gross ton Lower Lake Ports	
	Mesabi, Non Bessemer, 51.5% Fe, Second quarter	\$9.90
	Mesabi, Bessemer, 51.5% Fe, Second quarter	\$10.05
	Old Range Non Bessemer, Second quarter	\$10.15
	Old Range Bessemer, Second quarter	\$10.30
MANGANESE ORE:	Swedish, Atlantic Ports, 60 to 68% Fe, Contracts, Per Unit	22.00¢
	Metallurgical grade, 48 to 50% Mn, Long ton unit	\$1.05
	Metallurgical grade, 46 to 48% Mn, Long ton unit	\$0.95
	Chemical grade, 80% MnO ₂ , Per ton	\$0.85
	Domestic U. S. Government ore purchasing depots: Daming, New Mexico; base price \$2.30 per long dry ton unit of recoverable manganese less handling and treating costs. Wenden, Arizona; base price of \$8.54 per long dry ton of 15% manganese ore. Butte, Montana; (black and pink ores) base price of \$4.87 per long dry ton of 18% manganese ore. Phillipsburg, Montana base price of \$6.43 per long ton unit of 15% manganese ore. Small lot program f.o.b. railroad cars, minimum 40% Mn. Base price (48%) \$2.30 per unit with premiums and penalties.	
MOLYBDENUM CONCENTRATE:	90% MoS ₃ F.o.b. Climax, Colorado, Per pound of contained molybdenum, plus cost of containers	\$1.00
TUNGSTEN CONCENTRATE:	Domestic, 60% WO ₃ Per short ton unit	\$63.00-\$65.00
	Foreign, 65% WO ₃ Per short ton unit (Scheelite)	\$25.00
URANIUM ORE:	Foreign, South American, Spanish, Portuguese	\$23.00
	Carnotite-Rascocite, F.o.b. purchase depot plus \$0.06 per ton mile (\$6.00 maximum), Grand Junction, Rifle, Durango, Naturita and Uravan, Colorado. Salt Lake City, Marysville, Thompsons, Moab, Hite, and Monticello, Utah, Shiprock, and Bluewater, New Mexico, Edgemont, S. Dakota. Base price for 0.10% ore is \$1.50 per pound and up to \$3.50 per pound of contained U ₃ O ₈ plus \$0.75 per pound for each pound in excess of 4 pounds per short dry ton and an extra allowance of \$0.25 per pound for each in excess of 10 pounds. A \$0.50 per pound development allowance paid on all ores purchases. At Shiprock all ores with more than 6% lime are penalized for excess lime. Carnotite-Rascocite, V ₂ O ₅ in ratio of more than 10 parts to 1 part of U ₃ O ₈ are generally acceptable at all AEC depots, but excess not paid for at Marysville, Monticello, Shiprock, and Bluewater	Per Pound V ₂ O ₅ \$0.31

NON-METALLIC MINERALS

BENTONITE:	Minus-200-mesh, F.o.b. Wyoming points. Per ton in carload lots	\$12.50
FLUORSPAR:	Oil Well grade, Packed in 100 pound paper bags	\$14.00
	Metallurgical grade, 70% effective CaF ₂ content per short ton F.o.b. Illinois-Kentucky mines	\$42.50
	Mexican, 70% f.o.b. border	\$25.00
	European, Atlantic Ports, 70%	\$37.00
	Acid Grade, 97% CaF ₂ F.o.b. Kentucky, Illinois, Colorado	\$60.00
PERLITE:	Crude: F.o.b. mine per short ton	\$3.00 to \$5.00
SULPHUR:	Plaster grades, Crushed and sized, F.o.b. plants	\$7.00 to \$9.00
	Long ton, F.o.b. Hoskins Mound, Texas	\$25.50
	Export	\$30.50

LONDON METAL AND MINERAL PRICES

August 13, 1954

Per Long Ton USA Equivalent cents per pound¹

COPPER:	Electrolytic, spot	\$234 0s 0d	29.25¢
LEAD:	Refined, 99.97%	\$95 15s 0d	11.97¢
ZINC:	Virgin, 98%	\$74 2s 6d	9.27¢
ALUMINUM:	Ingot, 99.5%	\$156 0s 0d	19.50¢
ANTIMONY:	Regulus, 99.6%	\$222 10s 0d	27.81¢
TIN:	Standard 99.75%	\$726 0s 0d	90.75¢
TUNGSTEN:	Long ton unit, 185s equivalent to		\$25.90

1. With Sterling pound at \$2.80.

Quotations on metals and certain ores through the courtesy of American Metal Market, New York, N.Y.

[World Mining Section—70]

MINING WORLD

PRODUCTION EQUIPMENT PREVIEW

PEP is just what new equipment, increased mechanization, and new methods can give to your mine, mill, or smelter. This PEP section is MINING WORLD'S way of making available to you some of the finest current information on mechanization.



Rotary Spade Head Bit Speeds Drilling Time

The Vascoloy-Ramet Corporation has announced the development of a new rotary spade head bit for use in rotary drilling methods. The bit, available in 1½-inch Hexagon or Acme threaded shank, is specially designed for hard ore drilling in materials such as argillite, quartzite, hard hematite, blue slate, ore and silica. It is tipped with a special carbide developed for mining uses.

It is said that tests conducted at one property on the iron range on ore with a high silicate content and some Jasper show that the new bit used in a rotary drill produced a 2% time faster penetration rate than a percussion drill. For more information fill in No. 347 on the PEP card.

New Starting System For Underground Tractors

A modified method of starting Diesel tractors in underground mining operations, where gasoline starting engines may not be applicable, is being employed on several Caterpillar DW-10 tractors in the field. The system consists of a Morrison air starter modified to an electrical method.

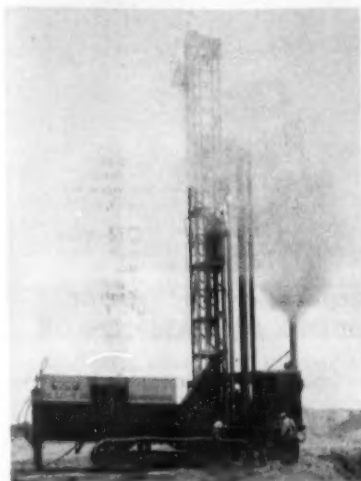
Under actual conditions at a temperature of 55 to 60° Fahrenheit, the cranking cycle on the engine was not more than 5 or six seconds on the test. For more information fill in No. 344 on the card.



Guide to Selection of Motorized Reducers

Bulletin 3100 is a working tool that contains all the information needed for the selection of any of the Falk Motoreducers.

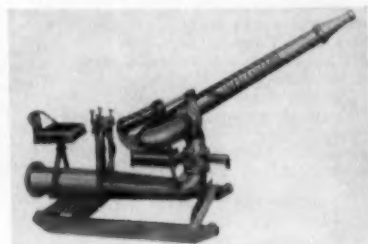
This booklet consolidates under one cover the selection tables, dimensions, weights, overhung load rating, and thrust capacity ratings needed to select horizontal, vertical, or right angle Falk Motoreducers in either the All-Motor or Integral design. For your copy fill in No. 343 on the card.



6,000 Pound Tool String Handled by Churn Drill

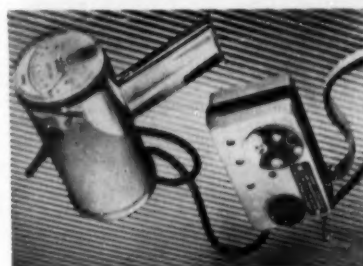
Bucyrus-Erie's 50-T blast hold drill is described in a 24-page bulletin (50-T-2) now available. The booklet offers a complete description of the machine's features along with a general specifications list.

With an all-steel trussed frame and rigidly braced 46-foot derrick for high stability, the rig can drill 9 to 12-inch holes and swing heavy tool strings up to 6,000 pounds. No. 345 on the card will get you a copy.



Ingenious Monitor Makes Hydraulicking Automatic

The Intelligiant, a hydraulic mining machine featuring two levers to give the vertical and horizontal traverse of the water stream, is now offered by the Chiksan Company. Two valves control speed of piston travel by the change in volume. Pressure for operating the unit comes from the water stream. An enclosed oil hydraulic system controls the giant where dirty water is encountered. Another model of the Intelligiant is available which offers fully automatic operation. Any predetermined pattern can be maintained without operator attention. Fill in No. 359 for more information.



New Gamma-Beta Device For Exploration Surveys

A sensitive gamma-beta radiation survey meter for prospecting has been announced by the Jordan Electronic Manufacturing Co., Inc.

Changes in radiation as small as 0.002 mr/hr near background levels are permitted by the use of a new principle in ionization chamber construction according to the manufacturer. Other troublesome components such as high voltage batteries, vibrator or rectifier power supplies, hi-meg resistors, and electron tubes to amplify chamber output have been eliminated. Obtain more information by filling No. 346 on your card.



Sanford-Day to Make Self-Loading Transport

The Gismo, a hard rock self-loading transport that is making low cost, high tonnage production history at American Zinc, Lead and Smelting Company's Grandview mine will be manufactured by Sanford-Day Iron Works, Inc. Company spokesman state that The Gismo has raised tonnage per man-shift from 8.95 to 36.28 while reducing labor costs per ton from \$1.57 to 61¢.

The unit comprises a crawler mounted self-loading transport with drilling attachment, and a crawler tractor of required size equipped with a winch, cable and controls. Fill in No. 348 on the card.



Portable Drill Rigs For Exploration, Blast Holes

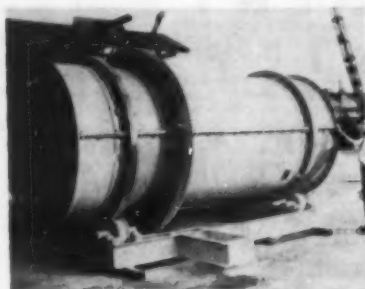
A new line of portable drill rigs have been introduced by the Drilling Accessory Manufacturing Company. The new rigs are designed for fast Seismograph shot hole, blast hole or core drilling with only minor adjustments required for each operation.

The machine features standardized air clutches in the drums of the portable rig, hydraulic torque converter coupling and auxiliary transmission on the mud pump. All chains and bearings operate in an oil bath, and chains are all the same size to cut parts cost. For further information fill in No. 360 on the PEP card.

Heyl & Patterson Enters Sintering Field

Heyl & Patterson have obtained exclusive marketing rights to the Agnew Sintering Machine. The agreement between Mr. Charles E. Agnew of Cleveland and Heyl & Patterson enables the latter to offer to industry complete facilities for the design, fabrication and erection of complete sintering plants. Mr.

Agnew will serve in a consulting capacity in the application of this equipment. For further information fill in No. 349 on your card.



Western Copper Refinery Treats Slimes In Kiln

A large Western corporation has recently purchased two special Standard-Hersey Rotary Kilns from the Standard Steel Corporation of Los Angeles, California. One kiln is being used in a new copper refinery for the treatment of slimes slurry, and the other is on a standby basis. Fusion kettles had previously been used, but were replaced when pilot plant tests showed these special kilns gave faster production and longer life.

After a primary settling, leaching and dewatering, the slime undergoes a bisulphate fusion process. In this process, the material is mixed with sodium sulphate and sulphuric acid and is then agitated in the kiln which is heated by gas burners. The selenium content is expelled by volatilization and recovered by a scrubber and Cottrell system.

Each of the two kilns is 6-feet in diameter and 14-feet long, with a 3/8-inch steel shell, ring gear drive. Use No. 430.



Largest Crawler Tractor Cat D9X Alongside Cat D8

A new Cat D9X tractor (left) is prepared for shipment alongside a Cat D8 tractor at Caterpillar Tractor Co., Peoria, Ill. Caterpillar Tractor Co. has announced that several Cat D9X tractors will be tested on a variety of selected jobs this summer in heavy-duty applications before they are made available to customers.

Extensive testing of this largest, most powerful crawler tractor in the world, will be closely watched by field engineers as well as product application personnel of the company. The experimental machines will do work under user's actual job conditions and by users.

Final design of production models will incorporate the suggestions and observa-

tions from the companies that are co-operating in the program. Tentative specifications on the D9X list the machine as 18-feet long, 12-feet wide, and 10-feet high. The bare tractor weighs 51,500 pounds. For more information on the D9X circle No. 47.

AMC Program

(Continued from page 70)

goma District, Ontario and the Athabasca Region, Saskatchewan will be described.

Round Table Conferences

A series of conferences have been arranged for producers of particular minerals. They will include a review of current production problems and government policies. Tungsten, chrome, and asbestos producers should find these highly informative. Tungsten discussions will be under the chairmanship of Charles H. Segerstrom, Jr. of the Nevada-Massachusetts Company. Fay I. Bristol has charge of the chrome conference, and Jack L. Neal will head the asbestos group.

Special Sessions

Everyone should look over the program included at the special session scheduled for the afternoon of September 22. Many will find discussions and talks which will appeal to their particular field of specialty. A symposium on drill steel will include a round table discussion of heat-treating and annealing problems. Addresses will be given on Development of Materials, Heat Treatment, Mechanical Treatment, and Quality Control to mention a few.

Members at the safety conference will hear Selling Safety to Employees, Safety Practices in Small Plants, and Safety Organization at Empire Star Mine. Other speakers will be included.

Industry Outlook

Here is the one meeting that every delegate will want to attend. A complete recapitulation of the mineral industry will be given by key officials and leaders. Developments and trends in ferrous and nonferrous metals, light metals, strategic minerals, and fissionable materials will be explored. Titanium, the new wonder metal, and nonmetallics will be highlighted. The Canadian and foreign outlook on mining will also be included.

TORQUE CONVERTER DRIVE: The Bucyrus-Erie company now offers torque converter-engine combinations as optional equipment on its excavators. It is said that the new drives provide maximum (stalling) torques from 200 to 225% of full load torques obtained with straight friction drive for a given excavator. Actual multiplication in the converter is three times the torque of high speed engines. No. 323 on the PEP card will provide you with more information.

VACSEAL PUMP developed as a rubber covered design to deal specifically with mining pulps, sands and other gritty suspensions has enjoyed a good success in the field. For handling pulps in which a considerable portion of the particle sizes approach 1/4-inch, the all metal Vacseal pump, with parts constructed of Ferloy iron, is recommended. More information on International Combustion Ltd's pumps may be obtained by readers outside the United States by inserting No. 324 on the card.

A HARD, ABRASION-RESISTANT iron alloy is announced by the Taylor-Wharton Company. The new alloy, known as Tisco 150-Y, was developed by company metallurgists to combat abrasion in its severest forms, and can be heat treated to 700 Brinell hardness. It should find applications for feed and chute liners, grizzly discs, impellers, pump liners, conveyor flights, and scraper blades to name a few. Use No. 325 on your card.

ALL PURPOSE TRACTOR announced by the American-Coleman Company is particularly adaptable for use by mining companies for equipment, material and personnel hauling in rugged and steep mountainous terrain. The speed, drawbar pull, durability and maneuverability incorporated in this unit make it ideal for heavy duty work or more delicate tasks such as mounting geophysical, drilling or photographic equipment. For more information fill in No. 335 on your PEP postcard.

HEAVY DUTY SCRAPERS made by the Alloy Steel & Metals Co. is described in bulletin No. 254. It is reported that after the scraper digs its load, it will lift itself out and ride the ore resulting in a saving in horsepower. This also insures a smooth runway. For your copy use No. 336 on the PEP card.

INTERESTED IN EXPLORATION? Get the Herb J. Hawthorne catalog 526 describing the wide uses and application of the Hawthorne replaceable blade bit.

Size range from 1 1/2 to 11-inches and are used for a wide variety of purposes such as—test hole drilling, grouting service, mineral exploration, or seismic shot hole drilling. You may get more information by filling in No. 327 on your card.

SHOVEL BULLETINS: The Schield Bantam Company, producer of truck-mounted power cranes and shovels, has announced publication of two new specification bulletins on 1/2-yard truck and powered-mounted units. For your copy of Bulletins TSH-301 and CSH-301 use No. 322 on the card.

SWIVEL JOINTS, PACKING and lubricants are described in bulletin G-4 of the Chiksan Company of Brea, California. Ball bearing swivel joints turn with full 360° rotation in three planes, handling air, hydraulics, fuels, oils, water and other fluids. Get your copy of this manual describing the research and testing facilities, specifications, and sizes of Chiksan products by filling in No. 338 on your card.

SAVE TIME, CUT COSTS in handling timber framing underground. The lightweight Wright Power Saw is fast and makes sizing of timber for specialized jobs easy. Get more information by using No. 339 on the PEP card.

EXHAUSTS PURIFIERS: OCM Catalytic Exhausts for removing harmful exhaust fumes from internal combustion engines in both industrial and commercial equipment are described in a 4-page folder. The compact catalytic units built into the exhaust chamber oxidize carbon monoxide and hydrocarbons, and find application in underground loading and haulage equipment. For more information use No. 340 on the card.

EARTHMOVERS CHECK THIS! A new cable-operated end dump wagon for rock and dirt, known as the Sierra Movall, is now in production by the C & D Manufacturing Co., Perkins, California. Capacity is 19 yards struck or 25 yards heaped. An 11 by 19-foot target area facilitates easy loading and spotting under shovels. The unit will dump from a jackknifed position. Independently controlled air brakes permit locking either tractor or wagon wheels or both, and add to dumping speed and safety. For more information fill in No. 341 on your PEP card.

PORTABLE UO₂ ANALYSIS LAB: The Sherwin Instrument Company has designed a completely portable uranium analyses laboratory for use by both professional and amateur prospectors. Miners and prospec-

tors can now get a fast, on the spot, analysis of ore samples. No chemical or mathematical training is necessary for users. The unit, housed in a compact carrying case, uses about 75 cents worth of material compared to a normal \$10.00 fee for commercial assaying. Use No. 342 for more information.

GASOLINE MINE HOIST for shaft or slope service at properties remote from electric power has been announced by Vulcan-Denver. Unusual safety features not ordinarily found in gasoline equipment are incorporated in the hoist. Lowering and hoistings are both performed in gear. Two sets of heavy duty post brakes meet state mining laws requirements. Use No. 337 on the card.

LIGHTWEIGHT AIR HOSE: A lightweight small diameter plastic air hose for use with pneumatic tools has been announced by the Boston Woven Hose and Rubber Co. of Cambridge. The hose (1/4-inch in size) weighs only 8.8 pounds per hundred feet, and is said to be flame and abrasion resistant as well. More information may be obtained by filling in No. 321 on your card.

HEAVY DUTY "MILL BEARINGS": New, heavy duty roller bearings, especially designed for the severe operating conditions found in mines, steel mills, and foundries, have been added to the extensive line of bearings manufactured by Link-Belt Co. These "mill bearings" incorporate precision Link-Belt self-aligning roller bearings in a particularly rugged steel pillow block housing. Link-Belt bulletin No. 2563 gives complete information on the "mill bearings." Use No. 433.

MAINTENANCE GUIDE: Another in its series of cartoon-style maintenance guides, Caterpillar Tractor Co. has just released this one for earthmoving equipment. The booklet tells how to care for bulldozers, cable and hydraulic controls, pipelayers, rippers, scrapers, shovels, and wagons. Fine points of adjustment and lubrication are explained in more than 90 drawings. Use No. 434.

SUCCESSFUL PARTS PROGRAM: An 8-page booklet showing the intricate system of a successful parts program has been released by Caterpillar Tractor Co. under the title "Caterpillar Dealer Parts Service." Bin storage and price practices, maintained stock, continuous inventory control and how emergency orders are expedited are all covered in detail. Circle No. 42 for your copy.

Fill in numbers and mail this card for literature on products discussed in this issue.

To get further information on any item described in the Production Equipment Preview, note the key number of that item, write in the corresponding number on the PEP card at the right, and mail. If mailed from a point outside the United States, proper postage must be used.

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MINE TO MILL TRANSPORT: If you have a ore handling problem perhaps the Riblet Aerial Tramway Co. of Spokane, Wash., designers, manufacturers, and erectors of Riblet-Hanson Ropeways can help you. For more information use No. 308 on your card.

CAT D 8 TRACTOR: Earthmovers in all fields will be interested in a new booklet (Form 31081) published by the Caterpillar Tractor Co. describing the new D 8 tractor. This booklet is available in English, Spanish, Portuguese, and French. No. 309 on the card will reserve a copy for you.

MILLING TUNGSTEN ORES is described in American Cyanamid's recently revised brochure. The various methods of processing tungsten ores, particularly the froth flotation processes used on western United States ores, are covered. Copies are available from the Mineral Dressing Department, American Cyanamid Company, 30 Rockefeller Plaza, New York 20, N. Y.

COLD WEATHER OPERATIONS: Operators of heavy duty gasoline and Diesel engines will be interested in Standard Oil Company of California's new Chevron Pressure Primer System, designed to quick-start all types of internal combustion engines at temperatures as low as 65 deg. below zero. Pencil in No. 310 on your card for more information.

WAGON DRILL DEVELOPMENT: Ingersoll-Rand has introduced a new self-contained and self-propelled twin-drill rig for use on heavy duty wagon drill type job. The integrated unit includes two hydraulic booms, two 10-foot drill towers, two heavy-duty drills, a crawler and a 600cfm compressor. For more information use No. 311 on the PEP card.

SHOVELoader: Designed for the economical handling of bulk chemicals, sand, dry materials, castings, scrap, etc., Baker-Lull Model 20 has an "all in one" packaged power train that helps reduce original purchase price and simplify maintenance. Get your bulletin on this 12-cubic-foot unit by filling in No. 312 on your card.

DRAGLINE FUNDAMENTALS: Replacement parts for any make or model of dragline bucket are described in a catalog released by Electric Steel Foundry Company of Portland, Ore. Other valuable tips included are, how to determine proper drag chain length; drag and hoist chain specifications; maintenance tips

and alloy recommendations. Use No. 313 on the card for your copy.

PACKAGED AIR COMPRESSOR in the 75 to 100 horsepower range that approaches the efficiency and economy of larger, more powerful, slow speed compressors has just been introduced by Ingersoll-Rand Company. The basic design is a two-stage unit for 80 to 125 psi, but other cylinder arrangements are available. For more information fill in the card with No. 314.

CHECK RADIOACTIVE ANOMOLIES: A brochure describing instrumentation for aerial or ground surveying for radioactive materials is now available from Nuclear-Chicago. Fill in No. 315 for more information.

RUGGED SCREEN: The new, improved Mesabi vibrating screen, built specifically for severe service applications, is the subject of a 16-page bulletin just published by Pioneer Engineering Works, Inc. The extra strength and wearability of the screen is emphasized. Screen capacity, selection and installation are also covered. Fill No. 316 for your copy of Bulletin 651.

WELDING STAINLESS STEELS: Bulletin No. WE-166, a complete manual on stainless steel electrodes manufactured by the Welding Products Division of the A. O. Smith Corp., has just been printed. The booklet covers in detail the metallurgy of stainless steel. Use No. 317 for more information.

INDUSTRIAL POWER PRODUCTS: The complete line of International Harvester's heavy-duty equipment is described in a 48-page catalog. Technical data, in streamlined form, is presented on crawler tractors, rubber-tired tractors with bottom dump wagon, four wheel scrapers, bulldozers and a variety of other products. Use No. 318 for your copy.

SPEED CONVEYOR REPAIRS: The Flexible Steel Lacing Co. announces that actual tests under field conditions have shown that fastening of wide conveyor belts can be speeded up as much as 50% with new Flexco Speed Tools. Bulletin No. F-110 describes the Flexco Power Tool Wrench. Fill in No. 319 on your card.

PROSPECTING INSTRUMENTATION developed as a result of government and mine exploration contracts is now available from the Radiac Company. The Super Fission Finder is a single all-purpose scintillation counter which can be used for aerial

and mobile prospecting. The Fission Tackle Deep Drill-Hole Logger may be used for reconnoitering to much greater depths. No. 328 on the card will provide you with more information.

MINERAL DRESSING NOTES: The latest edition of American Cyanamid's mineral dressing notes (number 20) is now available. This bulletin contains a complete description of functions and uses of Cyanamid's chemical and flotation reagents in the ore beneficiation field. This is a must for all metallurgists. No. 329 filled in on the card will provide you with your copy.

SLUSHMASTER SCRAPERS are described in bulletin 253 of the Alloy Steel and Metals Company, Los Angeles. These lightweight scrapers feature a low center of gravity and positive digging action. For your copy use No. 330 on the card.

EIGHT MONEY MAKING FEATURES of a variety of Diesel engine applications are described in a new booklet titled Cat Diesel Engines Plus Hydraulic Torque Converters. No. 331 reserves your copy.

MODERNIZE COMMUNICATIONS: Internal communication systems for office to shaft head and pit, for maintenance to pit, and for office and shaft to underground stations is announced by the Belmont Electric Co., Inc. Get more information by filling in No. 332 on your card.

FATTY ALCOHOLS IN FLOTATION: The use of ceryl, oleyl, and stearyl alcohols in various applications is described in a bulletin by the M. Michel and Company. Use No. 333 for your copy.

TRACTOR MOUNTED COMPRESSOR: A new bulletin on the Le Roi 600 CTM points out that the recently introduced power take off compressor is now available for mounting on any leading make of crawler tractor. Literature may be obtained by filling No. 334 on the card.

LIGHTWEIGHT RIPPER made by the Hensley Equipment Company is a heavy duty tool which fits all small, medium and large dozers. Excellent penetration—8 to 18-inches—may be obtained. If replacement parts for tractor equipment are your problem fill in No. 326 on the card.

MINE AND INDUSTRIAL CARS are described in a 59 page catalog, No. 334, prepared by the Bethlehem Steel Company. Included in the catalog are cars of large and small capacities 4-wheel trucks, all steel construction, forged steel wheels, automatic couplers, side-dump and end-dump, floating drawbars and other features. Use No. 432.

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Magnet Cove Producing On Nevada Barium Claims

Production has been expanding rapidly at the Greystone group of barium claims near Elko, Nevada, leased by Magnet Cove Barium Corporation of Houston Texas. Since March 1, when operations began, ten miles of road have been built to the mine, bins have been installed, machinery moved in, and ore has been stripped.

The company plans eventually to erect a mill either at the mine site or at the railroad shipping point to make the finished product. At present the barium is hauled 42 miles to a crushing plant at Beowawe, Nevada, and then shipped to a California plant for refining.

The open pit now has a face of about 40 feet of highgrade barium, and has 75 feet to go to reach the hanging wall. The footwall is about 1,000 feet below, making a deposit which is known to be over 1,000 feet wide and 3,000 feet long. Arrangements are being made for larger shipments than the current two carloads a day.

ARIZONA

Production is expected to start shortly at the new 150- to 200-ton mill being constructed by Don Lieberman Associates in Tucson, Arizona. Its principal operation will be concentrating and cleaning of tungsten ores and concentrates. Most of the ore—about 10 tons per day—will come from a Lieberman Enterprises mine in the Las Guijas Mountains, southwest of Tucson. The latter has a mill at the mine site but it treats low-grade ores only. An electro-magnetic separator will be installed in the new mill, and a nitric acid plant may be added later. Albert Ellis and W. F. Randall will direct mill operations.

The *Old Reliable* copper mine about 11 miles east of Mammoth, Arizona is producing again after being closed for 35 years. Lewis W. Douglas, former United States ambassador to England, is a director and the major stockholder. Official name of the new company is *Copper Creek Consolidated Mining Company*. Current production is about 80 to 90 tons of ore a day averaging 3.0 percent copper.

CALIFORNIA

The *Miracle Mining Company* has made its first shipment of uranium ore to the *Vitro Uranium Company's* concentrator at Salt Lake City, Utah. The ore was mined on the firm's Mann property at Miracle Hot Springs, 35 miles northeast of Bakersfield, California. The shipment was made under a "fringe" contract with the AEC which provides for payment of freight costs by the government to allow small mine operators to get a

start toward development. Grade of ore and extent of the deposit have not been revealed.

Marvin Art of Bakersfield, California, whose uranium discovery was described in *MINING WORLD* last month (page 82), has joined with four associates to develop his claims; 1,300 acres have been staked on one side of Ventura highway in the Cuyama Valley, and 3,460 acres across the river. The claims are in both Ventura and Santa Barbara counties. Mr. Art made his discovery while doing assessment work on the family's gypsum claims. The AEC will buy uranium ore assaying 0.10 percent or better. Assays of cores from the Art property have reportedly been 0.04 percent U_3O_8 at 75 feet, and 0.06 at 95 feet.

The *Ajax Tungsten Corporation*, which has a 10-year lease on the *Hanging Valley* and *Tungstar* mines near Bishop, California, is reported to have discovered a high-grade pocket of tungsten ore at the end of a 500-foot adit that was being driven to the lower section of the ore body. The ore runs between 1.0 and 5.0 percent tungsten trioxide. Depth is still unknown but the vein has been crosscut for 16 feet. The mine is owned by *Tungstar-Hanging Valley Mining Company*.

The *Hanging Valley* mine is located near the 12,000-foot level on Mt. Tom, within a half-mile airline of the *Tungstar* where Ajax also has a crew at work. The ore from *Hanging Valley* is hauled by tractor to the 9,000-foot level where it is loaded onto trucks, and hauled to the former Benware mill under lease by Ajax from the *Molybdenum Corporation of America*.

The mill is currently on a two-shift daily basis and is processing about 40 tons of ore per day from the Ajax company's other property near Darwin. The Darwin is leased from the *Darwin Consolidated Tungsten, Inc.* An electric hoist has been moved to the property, where a new steel gallows headframe will be erected. A Diesel electric generating plant will also be installed.

The *Eaglebird* mine, 15 miles east of Alleghany, California on Granite Mountain, is being reopened for gold production. A new road is being built to the property, about 600 feet of retimbering in the tunnel is being completed, and construction of a nine-room bunkhouse is under way. A five-stamp mill is also to be installed.

NEVADA

Platora Uranium Corporation is negotiating for additional claims adjoining the *Moonlight* mine in Humboldt County, Nevada, after being particularly encouraged by an assay of a grab sample of ore. The assay report showed 0.41 percent U_3O_8 . A 50-ton shipment is being prepared for *Vitro Chemical Company* in Salt Lake City.

H. A. Modarelli and Peter E. Galli, Jr. of Paradise Valley, Nevada are operating a manganese mine in the Paradise Val-



Kaiser Installs New Plant To Up-Grade Ore

Kaiser Steel Corporation's new plant at Eagle Mountain, California, designed to extract the maximum amount of iron ore from its high-grade deposits, has been completed and placed in operation. The new facilities are reported to be the only units of their kind in operation in the West especially built to up-grade iron ore. "The higher grade of ore resulting from this operation will bring about transportation savings in the movement to the steel mill and will permit new operating efficiencies in the blast furnaces at Fontana," says Jack L. Ashby, vice president and general manager. The average iron content of the ore as mined from the open-pit operation is 51 percent; after being processed in the new facilities, the ore will have an average iron content of 56 percent. The ore goes from the primary crusher (lower left above) to the new plant (upper left), where the first step in the process is a magnetic unit which attracts high-grade magnetite ore. The remaining hematite ore is upgraded by a heavy media process; the higher grade ore, which is the heaviest, drops to the bottom. This is taken off and combined with the high-grade magnetite ore for loading into railroad cars. The ore with lower iron content, being lighter in weight, is floated away by solution and sent to a waste stockpile. The plant is designed to process more than 2,000,000 tons of ore per year.

ley district as *Mogul Mining Company*.

The Nevada Bureau of Mines is studying all titanium mineral localities in the state. Anyone knowing of such a deposit is requested to send his name and address along with an exact location of the deposit to Dr. Vernon E. Scheid, director, Nevada Bureau of Mines, University of Nevada, Reno. Samples of titanium ore sent in will be tested and reported to the sender. The Bureau's geologists will try to visit all reported titanium localities.

The *Consolidated Eureka Mining Company* operating at Eureka, Nevada under a DMEA loan is reported to have located a four-foot-wide, lead-zinc-silver ore body in crosscutting operations. A carload shipment has been sent to the

treatment plant of *United States Smelting Refining and Mining Company* at Midvale, Utah for assay.

NEW MEXICO

Kerr-McGee Oil Industries, Inc.'s \$3,000,000 uranium processing mill near Shiprock, New Mexico, will go into operation in November. Located on leased Navajo Tribal land, the mill will process uranium ores from Kerr-McGee's mining

operations near Cove, Arizona. The firm will also buy and process ores from other mines in the area on and off the Navajo Reservation. The mill site covers 160 acres of Navajo land and 10 acres inside Shiprock where 23 company homes have been erected. Kerr-McGee's mining and milling operations in the Shiprock area are under the direct supervision of Clyde Osborn, who is general superintendent of the Navajo Uranium Division of the Manufacturing Department. M. H. Bolton is assistant general superintendent, Charles Lindberg is mill superintendent, and Thomas Fagan is mining foreman.

The New Mexico Bureau of Mines and Mineral Resources, a division of New Mexico Institute of Mining and Technology, Socorro, has published a detailed report on the "Geology of the Thoreau Quadrangle" in the northwestern part of the state. The bulletin, No. 31, contains detailed information on the structure, stratigraphy and mineral resources. Research was carried out cooperatively by NMIMT and California Institute of Technology.

The New Mexico State Mine Inspector reports that 16 uranium mines were delivering ore during the month of May. Twelve of the 16 producers are located in the Grants mining district, and the other four in the Four Corners area. The figures do not include mines operated by Indians on Indian Land.

James W. McAlpine of Silver City, New Mexico has sold the *El Cobre* mines at Fierro, Grant County, to a group from Minneapolis, Minnesota. Seventeen copper claims totaling 340 acres are involved in the transaction. The group has been incorporated as *New Mexico Exploration Company* to develop the property. A 100-ton mill is reportedly now under construction, with an estimated 10,000 tons of copper ore stockpiled.

TEXAS

Standard Sulphur Company is about to undertake a \$1,500,000 expansion program at its Damon Mound property 20 miles south of Rosenberg, Texas. A second mobile sulphur plant has been purchased to mine sulphur on the Bryan Dome also in Brazoria County where the company has about 1,500 acres under lease. The firm has also acquired lease on 585 acres at Allen Dome and a third mobile plant may be located there. Another unit is being added to the Damon Mound plant to increase present plant capacity from 250 tons a day to 350 to 400 tons. The company reports it has produced 38,000 tons of sulphur since it went into operation last November.

The latest uranium search in Texas is centered along the Llano-San Saba County line. Scintillometer testing is being conducted on the property of Mrs. Cora Thaxton near Cherokee. Some 1,500 acres in the area between Cherokee and Llano have been leased by various parties.

The *Federal Facilities Corporation* has been formed to take over the operation of the federal tin smelter at Texas City, Texas. The *Reconstruction Finance Corporation* which had been in charge of the smelter has been discontinued after 22 years.

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AIME Group to Meet October 5-9 in New York

The Industrial Minerals Division, AIME, will hold a four-day conference, beginning October 5 at Lake Placid, New York.

Included in the talks scheduled for the conference are "Anorthosite as an Industrial Mineral," to be given by J. G. Broughton of the New York State Science Service, and "Wollastonite and Diopside, New Industrial Minerals," by Consultant Raymond Ladoo. Discussions of geological deposits in the Adirondacks and Ottawa Valley area are also on the program.



Monsanto Chemical Company is erecting a 400-ton-per-day 100 percent sulphuric acid unit at its William G. Krummrich plant at Monsanto, Illinois. The new unit is expected to be in production by January 1, 1955.

The Mineral Deposits Branch of the Wisconsin Geological Survey is doing geology and structure mapping of twelve 7½ minute quadrangles, three of which will be completed this year. The area between Dodgeville, and Mineral Point is being mapped by J. W. Allingham; the area around Linden by J. E. Carlson; and the Platteville area by A. F. Agnew, project chief of the Wisconsin-Iowa-Zinc-

Lead Project. All of these are old mining areas.



The aluminum industry established new quarterly production records during the first half of this year. New monthly records were set in January, March, and May. The first quarter established a production record of 698,137,342 pounds, only to be surpassed by the second quarter with an output of 732,515,499 pounds. The production for the first half of the year was almost 20 percent over the 1,198,407,109 pounds produced during the first half of 1953, and almost as much as during the entire year of 1950.

Heavy mud conditions at International Minerals & Chemical Corporation's Peace Valley and Noralyn mines operated by the Florida Phosphate Division caused a slight reduction in anticipated production of concentrate and pebble rock during June. However, the two mines still came close to their allocated tonnage for the month, while Achan mine, the smallest of the three, was well over its production quota.

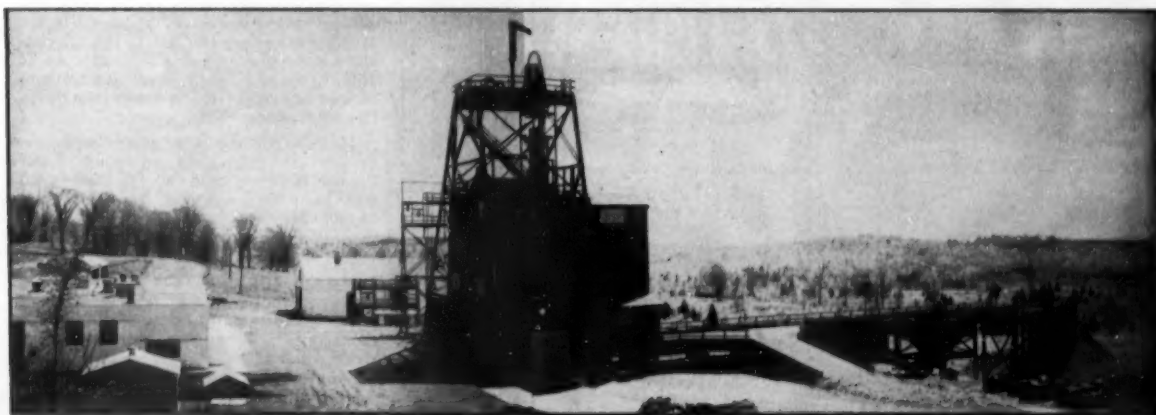
Tennessee Copper Company has just about completed its new sinter plant at Copperhill, Tennessee and it should be in production shortly.

The Third Annual Conference on Atomic Energy in Industry, sponsored by

the National Industrial Conference Board, will be held in New York on October 13 through 16. Scientists, businessmen, and government officials from all over the world are expected to attend the 16 sessions and to participate in discussions designed to further cooperation between nations. The heads of the atomic energy programs of Argentina, Australia, Belgium, Brazil, Canada, Denmark, France, Great Britain, India, Italy, Mexico, The Netherlands, Norway, Spain, Sweden, Switzerland, and the Union of South Africa have been invited to address the sessions.

The Cushman-Pfeiffer areas of Arkansas are currently making regular shipments of manganese to the government stockpile. During June a total of 27 carloads was shipped, while in the period from January to June 106 carloads were shipped. A freight car holds about 60 long tons, and will average between 40 and 48 percent manganese. There are six washers in operation in the area, and seven firms are in the shipping business: Arkansas Mining and Exploration Company, McBride and House, Apex Mining Company, Miller and McGee, Rogers and Lee, Leonard Baxter, and Memphis Tin Compress Company. Some of the major mining operators are Paul Galloway, Dobson and Clouse, Gus LaFoy, Charles Sims, and John Garrison.

The Zonolite Company of Chicago will build a \$200,000 processing plant later this year near Enoree, South Carolina to treat vermiculite ore. The company has nearly completed a similar plant near Libby, Montana, has purchased a new plant at Ellwood City, Pennsylvania, leased another at North Billerica, Mas-



Pickands Mather Opens New Michigan Iron Mine—The Lawrence

A panoramic view of the plant located at the new Lawrence mine of Pickands Mather & Co. at Crystal Falls, Michigan, is shown above. To the right of the headframe is the trestle extending over the railroad siding to the stockpile area. Over the railroad tracks and under the trestle, the leading pocket is visible. Behind the headframe is the hoist building; to the left of that are the office, shops, dry, and boiler room located in the main building. In the background is the car-storage garage. The ore body to be tapped by the Lawrence is part of a large deposit underlying four 40-acre tracts, parts of which have been mined since the turn of the century. The Lawrence section lays a short distance directly west of the old Carpenter shaft which was abandoned in 1927. All of the above-ground plant of the Carpenter was torn down, and the new equipment moved to other mines in the early 1930's. The Lawrence, which will use the same shaft, is new in every other respect. The old shaft, after being

pumped out, was concreted for the first 40 feet, and re-timbered for the rest of its depth. It was extended an additional 60 feet, and now bottoms at 685 feet below the surface. Exploration work is practically completed. It has been carried out on two levels: the 480- and the 630-foot levels. First phase of underground work was carried out with three 4-ton Westinghouse locomotives, and already on hand for full-scale operation are two 6-ton General Electric locomotives. Tram cars are of the rocker type, and of 65-cubic-yard capacity. Included in underground equipment are three Elmcro loaders—one for each of the two operating levels, and one as a spare. An Allis-Chalmers 18- by 30-inch jaw crusher will be set up on the 630-level for crushing all ore before it is hoisted to surface. In winter, ore will be taken from the skip dump to the stockpile area by Dumpsters; in summer, ore will be moved to the railroad loading pocket by tram.



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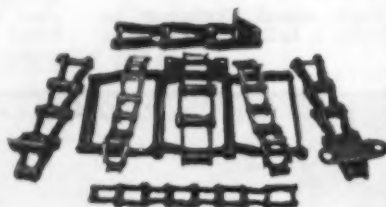
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sachusetts, and acquired one at New Orleans, Louisiana. These expansions are being made because of a new process which utilizes low-grade vermiculite ore, and Zonolite's mines contain large reserves of this type of ore.

The Florida Board of Parks and Historic Memorials refused a request by Nuclear Magnetic Mining Inc. for mineral rights to explore in Anastasia State Park near St. Augustine. The board explained that such a grant would deviate from its policy of not exploiting park lands for minerals, oils, or gas.

The Crane Company is reported to be exercising its option to acquire and bring into production heavy mineral-bearing alluvial deposits in South Carolina originally developed by the Perry Minerals Company. Callahan Zinc-Lead Company holds a 50 percent interest in Perry Minerals. Perry will receive royalties on production.



The Cleveland-Cliffs Iron Company is pouring a concrete headframe for a new shaft to be known as the Cliffs C shaft. Nordberg Manufacturing Company is making a Koeppel-type hoist for the installation. The shaft is being raised from several levels in the workings below. It will replace the two, low-capacity shafts that formerly serviced the property.

Shipping firms on the Great Lakes predict an early tying up of ships this season. Mid-November, a month early, is expected to see the last of the ore carriers leave the upper lake ports. As of July 1, there were 34,989,098 gross tons of iron ore stockpiled at lower lake ports, the most since 1938.

In spite of the late season opening, vessels are delivering ore much faster than it is being used. So far 29,000,000 tons have been shipped. This year's requirements are estimated at not more than 65,000,000 tons.

The Minnesota Iron Ore Division of Jones and Laughlin Steel Corporation is planning on the installation of a small heavy media plant at the Wentworth property, east of Aurora, Minnesota. The Wemco mobil mill originally installed at the Grant mine, near Ruhl, will be used. A small jig section will also be installed. J&L made the first shipment from the Wentworth in 1952. A small wash plant is presently being operated there.

Cleveland Cliffs Iron Company has cut operations on the Mesaba Range to 4 days a week, matching its present practice in Michigan. At some properties, maintenance is being handled on the 5th day. The decreased ore demand this season is responsible for the cutback.

To increase capacity and grade of product, the Coons-Pacific Company has installed a 5½-foot Symons tertiary crusher at its Eveleth plant. This follows the 4-foot Symons secondary and 30-inch by 42-inch Pioneer jaw crusher. With the addition, the feed will be crushed to ¾ inch before further treatment by heavy media, jigs, and spirals.

MINING WORLD

precipitates—NORTHWEST

Survey Suggests Changes In U.S. Bureau of Mines

Four basic recommendations materially changing the organizational makeup of the U. S. Bureau of Mines have been made in the survey report issued by the five-man team that Secretary of the Interior Douglas McKay appointed last fall.

These basic recommendations are: that the number of regions be reduced from nine to four; that administration of health, safety, and coal mine inspection activities be separate and apart from scientific and technical research activities; that there be a coordinated strengthening of all statistical and commodity analysis work; and that a plan of organization be adopted under which the Washington office retains responsibility for policy and program determination, while conduct and management of research are decentralized.

Region 1, under the reorganization, would include Washington, Oregon, Idaho, California, Nevada, and the Territory of Alaska, with headquarters at Reno, Nevada. This would eliminate regional offices in Juneau, Alaska, Albany, Oregon, and San Francisco, California.

Region 2 would consist of the states of Montana, Wyoming, Utah, Colorado, Arizona, New Mexico, North and South Dakota and Nebraska. Denver is considered the logical regional headquarters.

Region 3 would include the states of Kansas, Missouri, Arkansas, Oklahoma, Texas, Mississippi, Louisiana, Florida and lower Alabama, Tulsa or Bartlesville, Oklahoma, are recommended as regional headquarters. Both are more centrally located than Amarillo, Texas, where the Bureau now maintains a regional headquarters in rented quarters.

Region 4—Minnesota, Wisconsin, Michigan, Iowa, Illinois, Indiana, Ohio, Pennsylvania, West Virginia, Virginia, Maryland, Tennessee, Kentucky, Alabama, Georgia, North and South Carolina, Delaware, New Jersey, New York and the New England States. The survey team points out that the total space available in Pittsburgh, Pa., Bruceton, Pa., and Morgantown, W. Va., is in excess of Bureau needs. The team believes that one of these stations should be closed and disposed of, and regional headquarters be located in one of the remaining two. Elimination of the Minneapolis and Knoxville regional offices would occur as a result of this new regional pattern.

County, Idaho from 600 tons of mill grade ore daily to 750 tons. About 325 men are employed.

Rocky Mountain Cooperative Prospecting, a partnership, is surveying and planning development of a ruby mica deposit near Kooskia, Idaho. The partners are Clarence Searls and Clifford Jacobson, Moscow, Idaho mining men. They travel by panel truck equipped with modern prospecting and ore testing equipment. They identify and sometimes assay mineral samples free of charge, but any follow-up work is done on a 50-50 basis with the property owner.

North Fork Mining Company called for bids on 800 feet of cross-cutting and drifting at its leased **Lucky Strike** property in the Beaver mining district north of Wallace, Shoshone County, Idaho. The DMEA-approved project calls for expenditure of \$44,500. L. S. Edwards is president.

Yreka Mining Company has levied a small assessment to raise funds to do annual work requirements on its unpatented claims east of Kellogg, Shoshone County, Idaho. Wellman Clark of Spokane is secretary.

Hunter Silver-Lead Mines, Inc. has levied an assessment to raise funds to perfect title to some of its unpatented claims west of Mullan, Shoshone County, Idaho. The firm is negotiating for deep development of its property from a shaft on adjoining ground owned by one of the district's larger operators. J. A. Allen, Spokane, is president.

Bradley Mining Company is producing tungsten concentrates at the **Springfield** tungsten mine eight miles from Stibnite, Valley County, Idaho and upgrading them by magnetic separation at Stibnite. Thirty men have been carrying on exploration and maintenance work at the company's Stibnite antimony properties. Two DMEA contracts are nearing completion. At the firm's **Ima** tungsten

mine in Lemhi County, results of a DMEA exploration project have been very favorable. John D. Bradley of Kellogg and San Francisco is executive vice president.

A new tonnage record was set of the **Gay** mine of **J. R. Simplot Company** in June with a total of approximately 170,000 tons of phosphatic shale produced. The mine is located near Fort Hall, Idaho.

Northwest Gold Fields Company is operating a large gold dredge in the headwaters of the Palouse River on Poorman's Creek near Harvard, Idaho. It is in full production despite the present low price of gold.

Idaho Custer Mines, Inc., working on a \$97,738 DMEA project at the **Livingston** property in Custer County, Idaho, has awarded a diamond drilling contract to Vivian Brothers of Kellogg. The firm will do 1,000 feet of coring from the 2400 level workings. Four holes will be drilled, each about 250 feet long. When drilling is completed, a winze will be sunk to 200 feet below the 2400 level to permit additional exploration.

Preparations for large-scale dredging of monazite sands in Bear Valley, north of Boise, Idaho, are nearing completion. A plant for processing dredge production is scheduled to go into operation by September. **Porter Brothers Corporation**, headed by Robert P. Porter of Spokane, is the operating firm.

Sun Valley Mining Corporation has purchased the Blaine County, Idaho properties of **Apache Mines Company** at bankruptcy sale and put 10 men to work under direction of E. A. Yaden, Hailey. A new lighting plant, air compressor, trucks, and other equipment have been purchased. Underground work has been started with the goal of making direct smelter shipments while the Apache mill is being overhauled. Holdings include the **Red Elephant**, **Bay State**, and **Valley**



Much additional work is planned in the next few months in the property of **Merger Mines Corporation** in the Coeur d'Alene district silver belt west of Wallace, Idaho. Some 1,600 feet of diamond drilling has encouraged more exploration. The drilling has been done into walls of an exploration tunnel **Polaris Mining Company** drove through **Merger** ground in its East Exploration project. C. H. Hunter of Coeur d'Alene is president of **Merger**.

Calera Mining Company has been engaged in stepping up production at its **Blackbird** cobalt-copper mine in Lemhi



Slushing Tungsten Ore at Washington Mine

Operations at the Stevens County, Washington property of **Germania Consolidated Mines, Inc.** are being stepped up to take advantage of the government's guaranteed price for tungsten. Yield has been about one ton of 65 percent tungstic oxide monthly. Ore is taken from stopes in the Keith and Norton mines. H. W. Traver is in charge of the company's operations. Mr. Traver and his partner, Henry Ewing, have leased the nearby **Seidlitz** mine from the firm and have installed a gasoline-powered air compressor and double-drum hoist and slusher. In the picture above Mr. Traver can be seen slushing the ore onto a grizzly through which the ore drops into a truck for haulage to a concentrator. The two men are also testing old mine dumps on the property for possible milling under lease.

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View mines west of Hailey. Louis Van Zatzman of New York is company president; John Lindsey of Jerome, vice president; and L. M. Lindsey of Jerome is secretary-treasurer.

Cordero Mining Company has begun mining tungsten at its *Wildhorse* property in the Wood River area near Hailey, Idaho. Production is being stockpiled pending completion of a mill. A mine office, bunkhouse, and boarding house have been constructed.

Monsanto Chemical Company reports that work is well on schedule in construction of its second elemental phosphorous furnace at Soda Springs, Idaho and it will be in operation on October 1. A second ore preparation plant has been completed and went into service on July 14, feeding furnace No. 1.

Sungold Mines, Inc. has a six-man crew at work at its property on Summit Flats, near Orogrande, Idaho, and expects to put into operation a concentrator installed last year. L. E. Pringle of Bremerton, Washington, is executive vice president in charge. William Putman of Trentwood, Washington is company president.

A tunnel-boring machine will be manufactured in Wallace, Shoshone County, by a new Idaho corporation, **United Metals Development, Inc.**, headed by Milton B. Badger of Gaysville, Vermont, and Springfield, Massachusetts. The patented machine, invented by Mr. Badger, is tractor-mounted and employs a rotary cutting head set with Carbide edges. Cuttings are conveyed over the machine to mine cars. Designed for operation by compressed air or electricity, the machine is made to bore holes 7 or 10 feet in diameter. The firm also plans to explore the C.A. and Dewey groups of claims in the Sunset Peak area north of Wallace and to develop a copper property south of Idaho Falls.

Fairhaven Mines of Boise, Idaho, has filed articles of incorporation at Boise, with capital stock listed at \$500,000 and directors: Gene Jack, S. C. Carr, and B. M. Andrews, all of Boise, Fred M. Jaquith of Caldwell, and Carl Fund of Nyssa, Oregon. Also filing were **Idaho Perlite**, Boise, by A. C. Winsky, Kathryn Winsky, and Eric Osterberg, all of Boise, capitalized at \$100,000; and **Frontier Mines**, Boise, by Edgar Jacobs, Ruth M. Compton, and E. L. Hayek, all of Boise, capitalized at \$100,000.

George W. Zeller of Wallace, Idaho, has been named receiver of **United Metals Company** at the request of **Pioneer Gold Dredging Company** under an alleged 1931 judgment. Two previous receivers died. United Metals has a large interest in **Black Bear Mines**.

Pony Tungsten Enterprise Company of Pony, Montana has converted an old gold stamp mill for the treatment of scheelite-bearing ores from its *Strawberry* mine 2½ miles west of Pony. The ore is crushed in a jaw crusher, and sent to a five stamp battery where it is reduced to minus-14-mesh. The ore then goes to a classifier. The fine material from the classifier is jigged to recover coarse scheelite. The material from the jig is sent to another Wilfley table where a final scheelite concentrate is made. Two levels at the mine are being developed to produce scheelite.

Minerals Engineering Company has placed an Eimco 105 tractor loader in operation at its *Browns Lake* open-pit

tungsten mine. It is initially being used to strip overburden from the valuable deposits. The machine loads waste into two Dumpsters. The ore is loaded by a front-end tractor loader into large trucks in which it is transported to the mill located near Glen, Montana.

Ed Leahy of Butte, Montana is building a road to the old *Froener* property located approximately 10 miles northwest of Clancy, Montana. He expects to start producing from there in the near future. Mr. Leahy is also still shipping oxidized lead ores from the *Alta* mine located near Jefferson City.

High operating costs have forced the closing of **Anaconda Copper Mining**



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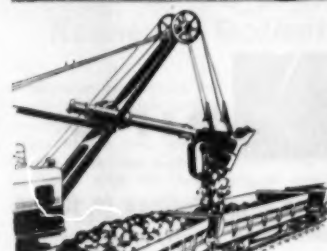
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MONTANA

Golden Anchor Mining and Milling Company has ordered a crushing-grinding unit for its *Big Dick* property at Treasure Mountain near Helena, Montana. The mill should be in production in the fall, treating lead, zinc, silver, and gold ore.

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NORTHWEST

Company's Travona mine in Butte, Montana. The property was considered to be in first class operating condition, with numerous stopes producing manganese ore and development projects continuing to be successful in opening unknown ore bodies, says Chester H. Steele, Anaconda vice president in charge of western operations. However, operating costs over the last few years have been increasing to the extent that it is now become impossible to operate the mine except at a heavy loss. Sales have slackened because of the availability of other manganese ores on the market at lower prices. The Travona is Butte's oldest mining property. The claim was located in 1875, patented in 1882, and purchased by Anaconda in 1928.

Contract Milling Company of Spokane, Washington, has started milling ore from the Marget Ann mine near Walkerville, Butte district, Montana, in a gold-silver-manganese concentrator it erected on the property. The mine is operated by Mitchell Mining Company of Mount Vernon, Washington. The milling company is headed by J. Stanley Huckaba, mining engineer, formerly with Western Machinery Company in Spokane. E. M. Olmstead is company president and R. J. Seideman of Butte is superintendent.

Nancy Hanks Mines, Inc. of Drummond was incorporated as a Montana corporation with capital of \$130,000 by John Reinhart of Portland, Oregon; W. J. Henderson, Spokane; and Conrad J. Klock of Dishman.

A group of Anaconda, Montana men have incorporated Silver Hill Tungsten Mining Co. with capitalization of \$100,000. They are Jack J. and Robert T. Meloy, Robert S. McKay, W. A. Emmanuel, John J. McCabe, Lynden M. Cline, Donald H. Loranger, Maurice A. Maffei, Carl J. Nelson and P. J. Mullen.

Mystery surrounds origin of strong radioactivity in an old prospect tunnel on the True Fissure property, Mineral County, Montana. Highest radioactivity is registered when a Geiger counter is carried along the tunnel. Neither wall rock nor dump rock gives much reaction. Investigations are being made to determine if radon gas is responsible. Radioactivity can be detected in clothing of persons coming out of the tunnel. At last report, consideration was being given to installing track and air lines and clearing a cave-in at about the midway point in the 2,000-foot tunnel. The property is owned by Guido Bardelli of Osburn, Idaho.

The Keith prospect near St. Regis, Mineral County, Montana is the scene of a new tunnel project to find the source of six tons of uranium-bearing ore found on the dump of an old adit driven about 1904. At last report, the tunnel had been pushed more than 125 feet. The company also has constructed a half-mile access road to the old Deadwood mine, between St. Regis and Superior, where bulldozing has exposed a narrow vein of lead-silver-copper ore. Clarence D. Nelson of Spokane is president and general manager. R. M. McDonald is office manager.

Sylvan Gold Mines, Inc., has resumed development work at its property near Basin, Jefferson County, Montana. Miners are drifting on two uranium-bearing veins and stockpiling production. Harve H. Phipps, Spokane, is company spokesman.

MINING WORLD

—precipitates— ROCKY MOUNTAIN —

Third Utah Ore Depot Opened in White Canyon

A uranium ore-buying station was opened by the United States Atomic Energy Commission in Utah's White Canyon area during August. Site of the plant is 15 miles east of Hite in the southeastern part of the state.

The station is being operated by the American Smelting & Refining Company and is buying copper-uranium, carnotite-scheelite, and other ores produced in the area. Equipment at the sampler includes primary and secondary jaw crushers, rolls, and a third crushing unit plus a sample grinder and pulverizer.

Other AEC ore-buying stations in Utah are at Monticello and Moab.

Ore Sampling Practices Studied by Mining School

A review of sampling procedures at major uranium ore-buying stations on the Colorado Plateau and adjacent areas is being conducted by the Colorado School of Mines Research Foundation, Inc. at Golden, Colorado.

Under contract with the United States Atomic Energy Commission, the foundation is actually making a re-check, since an original survey was conducted by the group in 1952. The present review began in June and covers sampling at the following ore-buying stations: United States Vanadium, Rifle, Colorado; Thompson, Utah, and Uraven, Colorado; Climax Uranium Company, Grand Junction, Colorado; American Smelting and Refining Company, Monticello, Utah; Shiprock, New Mexico, and Edgemont, South Dakota; Anaconda Copper Mining Company, Bluewater, New Mexico; and the Vanadium Corporation of America, Durango and Naturita, Colorado.

Mining Laws Amended For Multiple Developments

The Congress has passed S. 3344 which has for its purpose the "Amending of the Mineral Leasing Laws to Provide for Multiple Mineral Development of the Same Tracts of the Public Lands."

Passage of the law was necessary to clarify the location of many uranium mining claims which were initially in unknown conflict with oil and gas leases. Its passage was urged by the Colorado Plateau Uranium Committee of the Colorado Mining Association, by the Uranium Ore Products Association, by various mining companies, and the several State mining associations in whose states claims were in conflict. For those interested in more details of the law, it is suggested that their requests be submitted to the Colorado Mining Association, Room 204 State Office Building, Denver, Colorado.

Highlights of the Bill are: Claims located under the provisions of the Act on any claims embraced within a mining claim which was located prior to February 10, 1954, then as to the area in conflict it must be yielded and the claim will be deemed to have been located 121 days after the enactment of the Act as to the area in conflict.

The owner of any pending lease application or uranium lease shall have a period of 120 days to locate mining claims covering his lease, subject to prior mining claim rights located prior to February

10, 1954, and further that within 30 days application for any lease shall be withdrawn from the United States Atomic Energy Commission.

Future mining locations and those validated by the Act shall be subject to a reservation to the United States of all Leasing Act minerals. This deprives the miner of certain rights which he had under the laws of 1872.

Location of mining claims is permitted on oil and gas, and other leased areas, subject to the provisions of the Act.



The Golden Cycle Corporation, uranium-vanadium producer on the Colorado Plateau, has extended its operations to two adjoining groups of uranium claims on the east end of Monogram Mesa in Montrose and San Miguel Counties, Colorado. The ore occurs in the Morrison formation, and drilling west and northwest of the property indicates that the uranium is found in more than one horizon. A conducted drilling program is planned for the near future.

Increased interest in Colorado's Animas Valley, Lightener Creek, and Junction Creek uranium properties is expected as a result of a strike reported in the Animas Valley, La Plata County during July. Option on the discovery, which covers 600 acres, went to the Byrd Petroleum Corporation of Dallas, Texas. Owners of mineral rights on the Tripp Creek property were Morton Thompson and Tom Aldridge of Durango, Colorado, but it is reported that a large portion of the claims are on Forest Service land. An immediate core drilling program is planned by D. H. Byrd, head of the Texas firm.

Argyle Mining and Milling Company, Silverton, Colorado, has taken over operation of the Pride Mine and is now shipping ore to the Pride mill for processing. The company is also conducting a development program at the near-by Mogul mine, directing a surveying project at the Blackhawk mine, and negotiating for additional leases in the Silverton district. President of the firm is J. Cameron Grant, Denver, and general manager of the local operations is Lester Steward, Silverton mining engineer.

Resumption of work at the Silver Queen mine, San Juan County, Colorado, has been begun by Ray A. and E. R. Bennett, owners of the property. The mine, which is at the head of Placer Gulch, has been closed since 1897. Prior to that time considerable tonnage was obtained from the mine with high values in gold, silver, and lead. Work planned for this summer includes driving 500 feet of drifts.

Carl I. Dismant, Denver, Colorado mining engineer, has purchased the Bachelor mine, north of Ouray, Colorado from J. R. Sonza & Associates. It has been idle since October 1952, when operations were suspended due to the low price of lead and zinc. Prior to the Sonza ownership, the mine was operated by the American Zinc, Lead, and Smelting Company.

A recent small but high-grade gold ore shipment from the Bessie G mine, 27 miles from Durango, Colorado, was valued at \$12,145 per ton, according to Karl S. Goff, vice president of Zodomoc Mines, Inc. A total of 347 ounces of gold was extracted from the ore. High-grade shipments from the mine are reportedly running 160 ounces to the ton. Secondary ore is running from four to 20 ounces.

A new uranium discovery has been reported in the Cochetopa mining district near Gunnison, Colorado by the Los Ocho Mining Company. The deposit was found 18 miles southwest of Gunnison near an abandoned 50-year-old prospect



Kennecott Dedicates New Utah Research Lab

Dedication ceremonies for Kennecott Copper Corporation's \$1,250,000 research center on the University of Utah campus at Salt Lake City, Utah, were held August 13. Kennecott, already engaged in several investigations, will coordinate research for its four Western mining divisions at the new laboratory. In addition to studies of better recovery from waste and low-grade ores, the center is examining improved flotation processes, including the use of new reagents and the feasibility of leaching unrecovered copper from present tailings. Built primarily of concrete, brick, and steel, the unit incorporates 40,000 square feet. When fully staffed 50 men will be employed by the laboratory. Director of research for Kennecott's Western division is S. R. Zimmerly.

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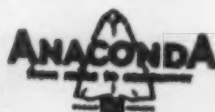
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hole. Thirty one claims have been filed by the company which is composed of R. G. Solvola and Jack Morrison, Colorado Springs, Colorado; Roy R. Roberts, Cripple Creek, Colorado; and Robert Bentley, Ben F. Powell, Carl Lee, and Harold McCurrey, Pueblo, Colorado.

Atomic Power Uranium Corporation has sent its first shipment of uranium ore from the Colorado Plateau. More than 15 tons of ore were removed from the company's mine in the Gateway Mesa district west of Grand Junction, Colorado, during the first part of July. Lucien High Cullen of Houston, Texas, president of the firm, estimates that monthly production of 500 tons will be achieved soon.

A stock offering made by the **San Juan Mining and Developing Company**, Ouray, Colorado firm, reveals plans to re-open several old gold and silver mines in the Trout Lake district of Colorado's San Miguel County. Properties under lease are the *Esmeralda* group of eight patented claims, which was operated until 1921, and the *Alpine* and *Mystery* lodes, west of the Esmeralda vein. The firm is offering 1,000,000 shares of non-assessable stock at five cents par value and is headed by Charles H. Turner, who was previously with the *Climax Uranium Company*.

The United States Geological Survey has released a geologic map and cross sections of the *Little Johnnie* thorium deposit in Gunnison County, Colorado. They are available for public inspection at the Survey's offices in Washington, D. C., Grand Junction, Colorado; Denver, Colorado; and Salt Lake City, Utah.

The United States Geological Survey is conducting an extensive uranium drilling program in the Morrison formation in western Montrose County, Colorado. Drilling headquarters have been established on LaSal Creek just east of the Utah-Colorado border. Drilling, largely to the north and west, is underway to extend the outlines of the ore deposits in the *Vanadium Queen* mine area.

Cimota Exploration Company of Moab, Utah has field geologists in Park County, Colorado checking by ground surveys anomalies reported by the United States Atomic Energy Commission as obtained by air-borne detection instruments.

Uranium, Inc., Utah mining firm, has purchased the mining claims in the Bull Canyon district of West Montrose County, Colorado, for a reported \$175,000. With drilling already completed, the firm plans to begin production at once. Former owners were Allan Hopkins, William Waldeck, Willard Leighton, and Bill Moore.

Leadville Lead & Uranium Corporation is the new name of *Leadville Lead Corporation*, Denver, Colorado firm, as a result of the company's increasing activity in uranium mining. The company has contracted with Hans Lundberg, Toronto geophysicist, for an airborne geophysical survey of the firm's three square miles of properties in the Mosquito Range, east of Leadville, Colorado.

Ozark-Mahoning Mining Company, Tulsa, Oklahoma, is reportedly showing interest in both the mining and milling aspects of the uranium industry on the Colorado Plateau. Ed Powell, mining engineer for the firm, who was recently in the Uravan District looking over some claims, said that as yet the company has not found any properties attractive enough to justify purchase or lease. Most

of Ozark-Mahoning's operations are located outside of Colorado, although the company does have an important fluor-spar mine and mill in Jackson County.

SOUTH DAKOTA

A uranium deposit containing carnotite ore has been reported by Art Ludwig of the *Edgemont Mining Company*, Edgemont, South Dakota. The ore is located

in the 960 acres of Marty Hill, 10 miles northwest of Edgemont in the southern Black Hills. The property, still in the exploration stage, has been leased by the firm from Otto Gould of Custer, Idaho. Edgemont Mining Company is also conducting exploratory work on 39 claims in Fremont County, Wyoming.

Uranium and Allied Minerals, Inc., Rapid City, South Dakota, has incorporated to engage in mining and smelting operations, with a capitalization of \$1,000,000. Directors for the firm are Don Burns, Philip, and E. H. Schmidt, Virgil V. McCombs, Delmar Nedved, and John C. Farrar, all of Rapid City.



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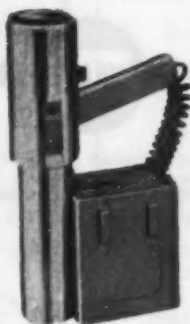
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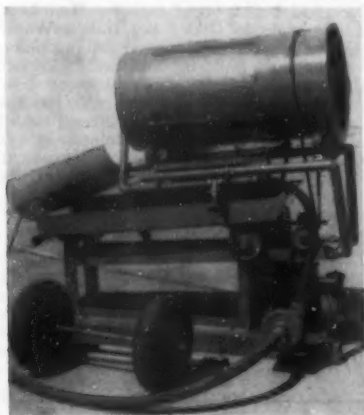
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Standard Uranium Corporation, Moab, Utah, expects to begin ore production at its *Big Buck* mine by November 15. An estimated 600 tons of uranium ore per day will be produced by 1955. Construction of surface plant, camp, and adit to the ore body is now underway at the mine, which is adjacent to the *Mi Vida* claims south of La Sal, Utah. William R. McCormick of Moab is executive vice president and general manager. Superintendent of mine operations is Robert R. Durk, formerly mine superintendent at the *Casleton* mine of *Combined Metals Reduction Company*, Pioche, Nevada.

Plans for a \$1,000,000 addition to *Kennecott Copper Corporation's* Utah division electrolytic refinery at Garfield, Utah, have been announced. A general contract for construction of the facilities, enlarging the plant's casting department, has been awarded the *Olsen Construction Company* of San Francisco, California. The project also includes an extension to the refinery maintenance shop.

A temporary shutdown at the *Tooele*, Utah plant of the *International Smelting & Refining Company*, subsidiary of the *Anaconda Copper Mining Company*, was called July 15 by F. A. Wardlaw, Jr., general manager of the operation. The shutdown, which has idled approximately 500 workers, was due to loss of tonnage



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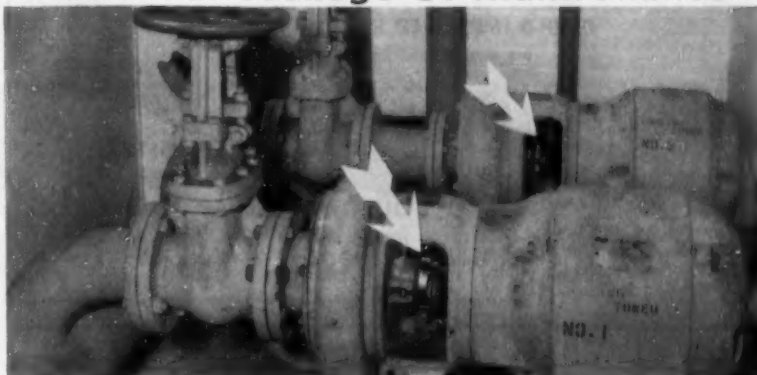
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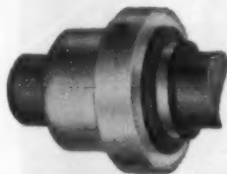
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for treatment by the mill and smelter, reflecting the "deplorable conditions in the lead-zinc ore mining industry," Mr. Wardlaw said.

Pioneer Gold Mines of British Columbia, Ltd., and associates have entered the Utah uranium field through a 65 percent interest in a lease on 47 unpatented claims 12 miles east of Hite. The company and C. W. Nash, Vancouver, British Columbia, who has a 10 percent interest, have agreed to spend \$50,000 in an initial drilling program. Jolly Jack Uranium Company, a new Utah corporation, has the remaining 25 percent interest.

An extensive deposit of high-grade phosphate rock and shale in Rich County, Utah has been acquired by Westaco Mineral Products Division, Food Machinery & Chemical Corporation of New York. Known as Jeffs Property, the tract is the last known large patented deposit in the western states and is expected to add millions of tons to Westaco's phosphate rock and shale reserves. Exploratory development work has been under the direction of the mineral development department at Pocatello, Idaho.

Timco Uranium, Inc., Salt Lake City, Utah, mining firm, has leased 15 claims in the Hite mining district to Gibbons and Reed Construction Company of Salt Lake City. The construction firm agreed to drill the claims as a provision of the lease.

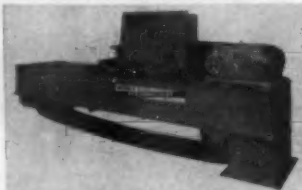
August Voltolini, Wray Featherstone and H. F. Magnuson, Wallace, Idaho mining men, have organized Moab Land and Development Company with capital stock of \$100,000.

Silver Buckle Mining Company, Wallace, Idaho, is readying its Mountain Lion claims in Utah's Big Indian Wash district for start of diamond drilling. Surveying, road building, and bulldozing of drilling sites were under way at last report. The initial program calls for 13 holes at a cost of \$30,000. Silver Buckle also is participating in development of the Vindicator Silver-Lead property east of Mullan, Shoshone County, Idaho. A proposed 750-foot shaft was down more than 300 feet at last report. Dr. F. E. Scott of Wallace is president.

Western Silver-Lead Corporation and Square Deal Mining Company, both of Wallace, Idaho, have leased the Juanita group of eight mining claims in the Yellow Cat district, Grand County, Utah. Exploration plans call for 60 holes from 70 to 200 feet deep. The property con-

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tains a 50-foot outcrop of uranium-bearing ore. Work is under supervision of Wray Featherstone, superintendent of *Golconda Lead Mines*, a Wallace area lead-silver-zinc producer, and Gus Vololini, representing Western Silver-Lead. Golconda is developing the Square Deal property near Wallace on a profit-sharing basis and owns a large block of Square Deal stock. George M. Grismer is president of Western Silver-Lead, with holdings east of Wallace.

The *National Lead Company* is conducting two uranium exploration programs in Utah. The first is southwest of Big Indian Canyon where *Joy Manufacturing Company* is operating five diamond drills under contract. Drilling here is on the western flank of the Lisbon Valley anticline. The second project is primarily underground in the French Springs district south of Green River, Utah, where *Minerals Engineering Company* is contracting a series of exploration adits.

The *Cal Uranium Company* has installed a new hoist at its San Juan shaft in the Big Indian district, San Juan County, Utah. Installation of the new hoist will permit increased ore production. Cal Uranium is now shipping to the United States Atomic Energy Commission's Moab provisional ore-buying depot, north of Moab and also to the Monticello ore-buying depot. Ore is hand shoveled and sampled, awaiting completing of the new mechanical sampling plant. M. K. Ruddock of Moab is Cal Uranium's manager.

Lavender Uranium Corporation, one of the newcomers to the Utah uranium field, has begun exploration work on its claims in the Indian Creek District, San Juan County, Utah. A contract with Glen B. Cash of Monticello calls for 150 feet of drift work on the claims. A second contract, with *Moki Uranium Syndicate*, includes plans for a 5,000-foot diamond drilling project elsewhere on the Lavender Uranium claims. George E. Bridwell, Salt Lake City attorney, is president of Lavender Uranium Corporation.

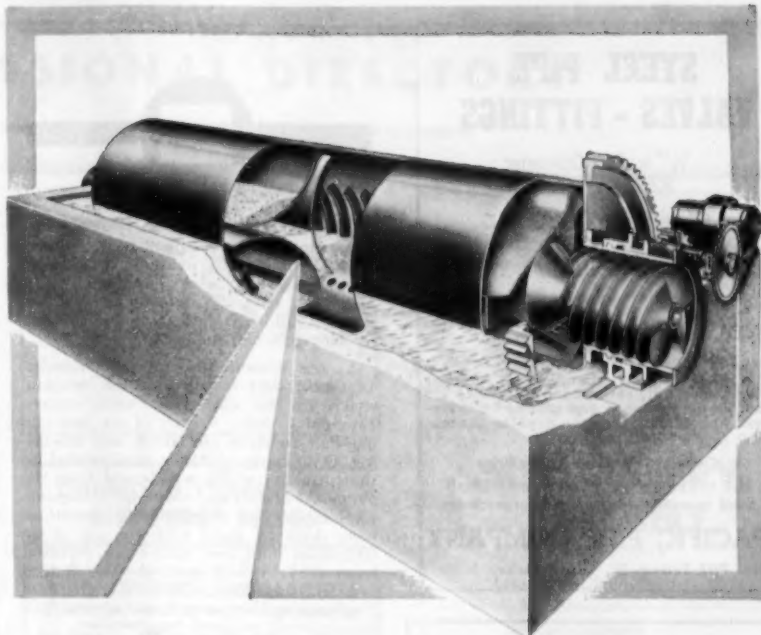
Calunite Corporation, New York, is readying its \$175,000 mill in Marysvale, Utah for production of what it hopes will be a low-cost, high-yield fertilizer. The company has been doing test work on Marysvale alunite for six years and reports that a special process which can blend the ore into a high-grade plant food has been developed.

Osborn Silver-Lead Mining Company, organized in Utah in 1953, has changed its name to *Vulcan Uranium Mines, Inc.* and optioned 10 claims 10 miles west of Moab, Utah. The company's articles of incorporation have also been amended and shares increased from 3,000,000 to 6,000,000, while par value was reduced from 10 cents to 5 cents and the shares changed from assessable to non-assessable.

Moss Copper Mining Company, Provo, Utah firm, has changed its name to *Big Indian Uranium Company* and has increased capitalization from 1,000,000 to 5,000,000 shares. Carl J. Harris is president of the new company.

Alpine Mining Company, Spokane, Washington, has leased two groups of mining claims in the uranium districts south of Moab, Utah and plans early exploration work. John B. White is president.

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Jefferson Lake Sulphur Company's
new sulphur recovery plant near Mander-
son, Wyoming is nearing completion.
Construction is being handled by the
Ralph M. Parsons Company of Los An-
geles, California, and will be finished
by November.

Sateco Uranium Company, Lander,
Wyoming, has revealed a rich uranium
strike in the Gas Hills area, eastern
Fremont County. A body of ore two and
one-half to three feet thick and extend-
ing an unknown distance was located on
the property, which was leased from the
Fremont Metal and Mining Company.
Exploration and development operations
were done by night with the use of an
ultraviolet light and assays are reported
from 0.98 to 3.19 percent. The Sateco
firm is a subsidiary of Schribo Aero Tool
Engineering Company, Los Angeles, Cal-
ifornia.

Silas P. Silverman, New York, has
bought 120 Fremont County, Wyoming
uranium claims from John Wells, founder
of the Wind River Uranium Company.
Mr. Wells said that the New York man
intends to spend a total of \$200,000 in
area claims. Fifty seven of the claims are
in the Gas Hills area, others in North
Owl Creek region. Headquarters for Mr.
Silverman will be at Riverton, Wyoming.
Also planning to establish offices in River-
ton are Lucky Mac, Inc. and the E. S. &
K. Development Company.

Old Faithful Uranium Company, Cas-
per, has incorporated in Wyoming, with
capital stock listed at \$750,000. Direc-
tors are William F. Swanton, Casper;
Glenn E. Hendershot, Cheyenne; and
Floyd W. Bailey, Rock Springs.

Release of five photomosaic maps
showing radioactive areas in Wyoming's
Carbon and Sweetwater counties has
been announced by the United States
Geological Survey. The maps cover 1-
000 square miles surveyed last Novem-
ber by the USGS for the Atomic Energy
Commission. Copies are available for
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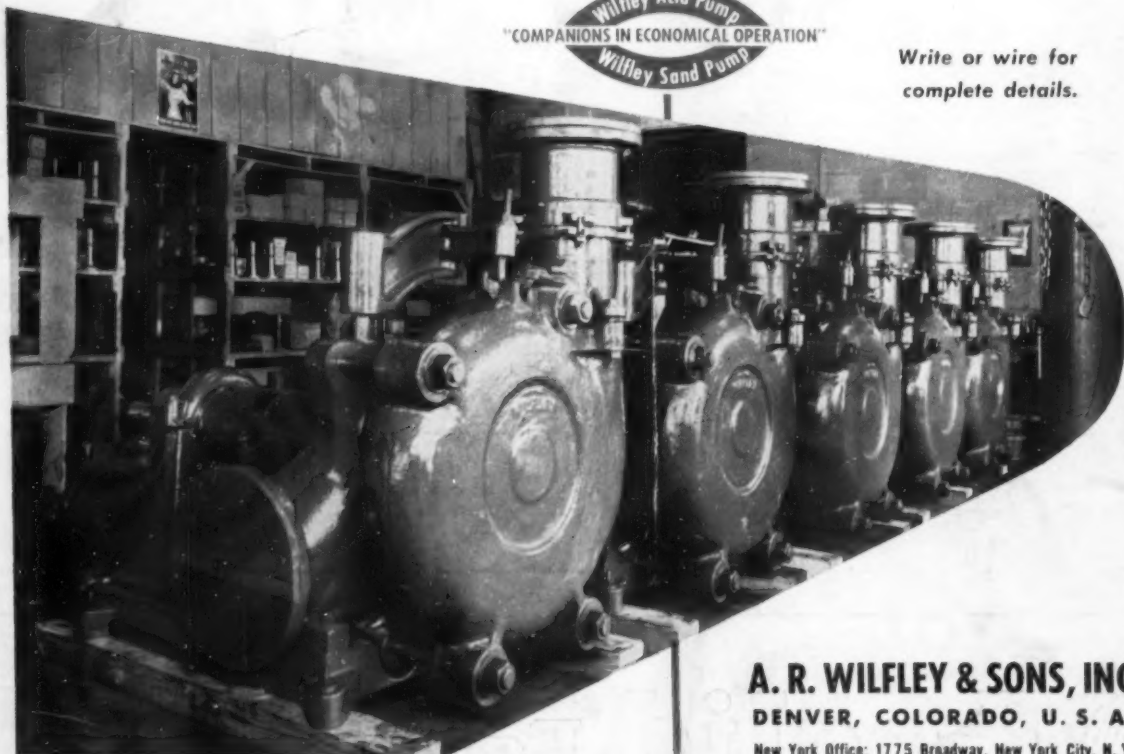
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